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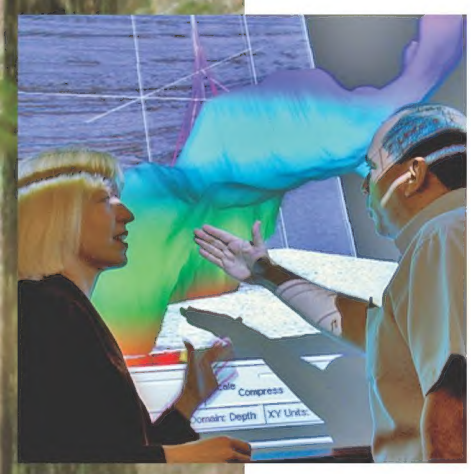

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A recent cyclone pushed the endangered cassowaries into people's backyards, causing problems for both species.

PHOTOGRAPH BY OLIVIER MATTHYS / EPA / CORBIS

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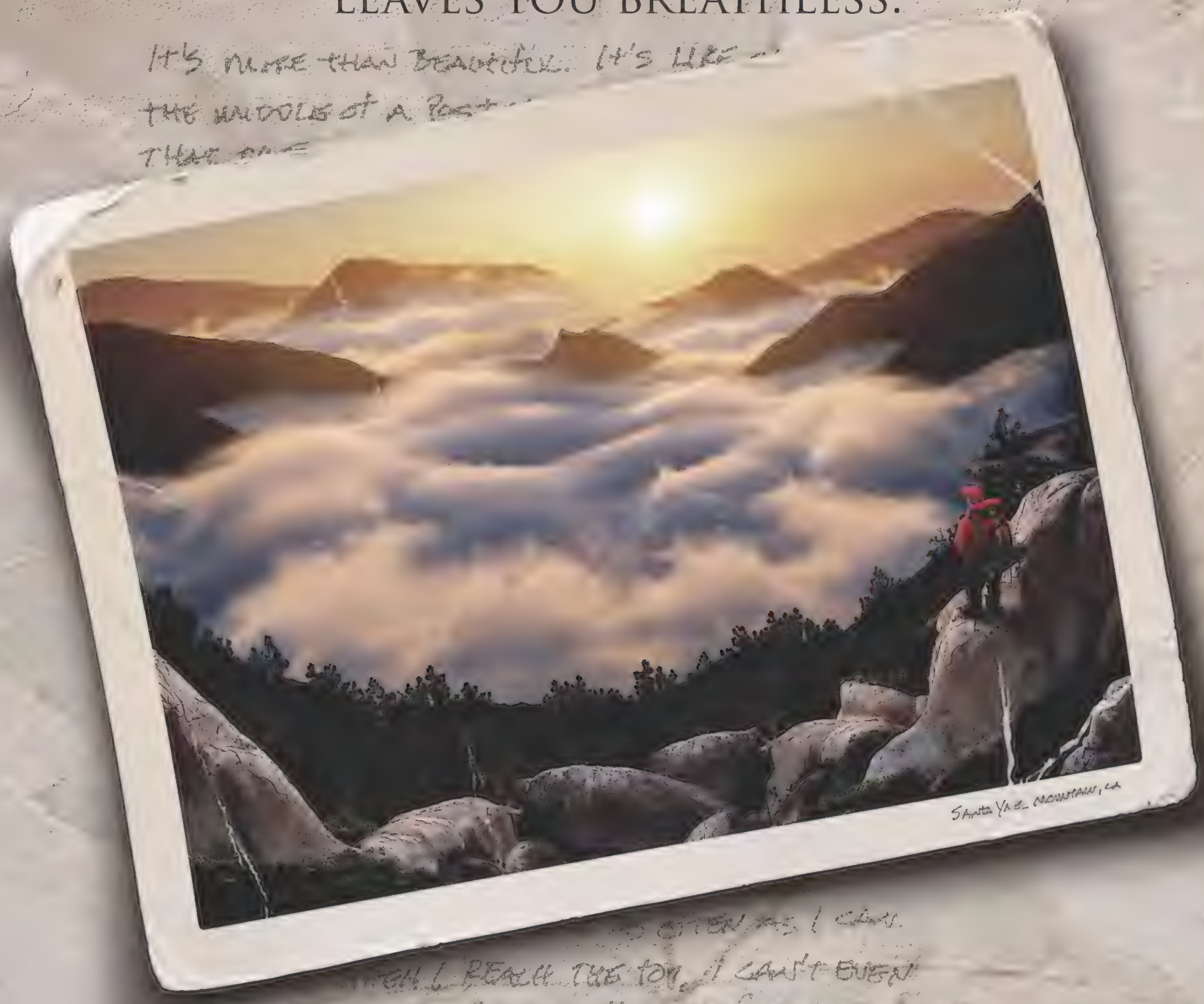
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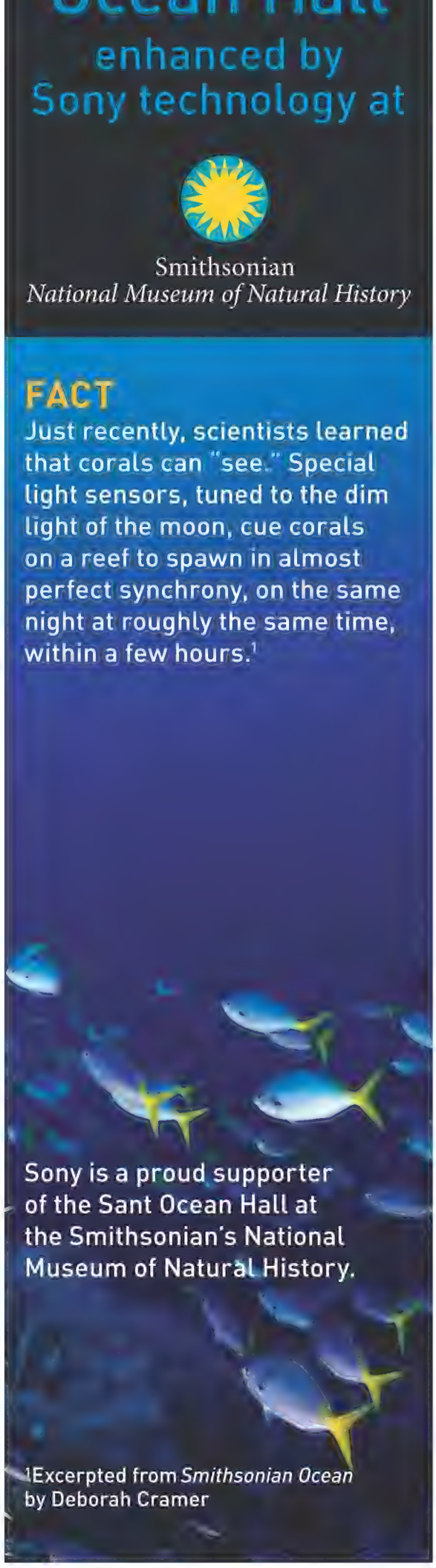
Just recently, scientists learned that corals can "see." Special light sensors, tuned to the dim light of the moon, cue corals on a reef to spawn in almost perfect synchrony, on the same night at roughly the same time, within a few hours.[1]



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[1]Excerpted from *Smithsonian Ocean* by Deborah Cramer

FROM THE EDITOR

Puzzlers

Stonehenge's purpose and a noble fish's demise

BY CAREY WINFREY

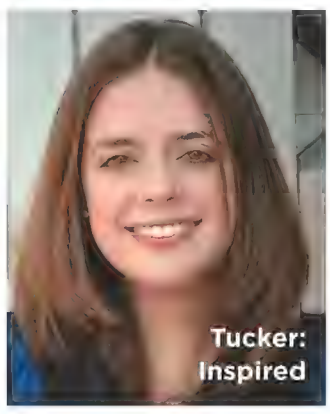
Jones: Surprised

ALTHOUGH DAN JONES has written about archaeology for such magazines as *New Scientist*, he had never visited Stonehenge, just 80 miles from his Brighton home, until we asked him to cover the first dig within the monument's inner circle in more than 40 years ("New Light on Stonehenge," p. 36). The excavation was led by archaeologists Timothy Darvill and Geoffrey Wainwright, who are convinced that Stonehenge was a place of healing, attracting afflicted pilgrims from near and far, much as Lourdes does to this day. What the pair hoped to learn was when the site's so-called bluestones were first put in place; they believe it was these smaller stones, imported from Wales 140 miles away, that the ancients imbued with curative powers.

Digging Stonehenge

Jones says he was at first surprised by the enormous media interest in the dig, with reporters coming from as far away as Russia. "But I soon found out how fascinated the public is with Stonehenge." As for the monument itself, Jones says that "when you're in the very center, you feel cut off from the outside world, quite protected and hidden, like it's a little sanctuary. You get a feeling of why people had such reverence for the place."

ABIGAIL TUCKER is the magazine's first staff writer in its 38-year history. A former features writer at the *Baltimore Sun*, Tucker was part of the *Sun* team covering the aftermath of Hurricane Katrina. "I think I always wanted to be a magazine writer," she says. "I just needed to develop myself as a reporter and narrative storyteller." She succeeded; in 2007, she was the recipient of a prestigious Mike Berger Award for human-interest reporting from Columbia University's Graduate School of Journalism.



Tucker: Inspired

In her first major outing for SMITHSONIAN, Tucker tackled why the chinook salmon population has crashed ("Farewell to the King?" p. 84). "There's something almost noble about these fish," she says. "They're born, they get big, lay eggs and then they die. In a way it's bleak, but at the same time it's beautiful. The odds are incredible, and when they achieve their goal, having lived in the ocean for three years, and come back hundreds of miles to the same place to spawn, it's awe-inspiring."

SARAH LEE; MICHAEL FREEMAN; MOLLY ROBERTS

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LETTERS READERS RESPOND TO THE **AUGUST** ISSUE

I cried when I saw the image of Tommie Smith and John Carlos, fists raised, at the 1968 Olympics [Indelible Images: "Taking a Stand"]. That year's historic moments rushed back as I recalled the heroes of my generation who sacrificed so that all men could be treated with fairness and dignity. It reminded me that "freedom isn't free," and I thank them. **CATHERINE FOLEY,** TAYLOR LAKE VILLAGE, TEXAS

HEROIC PERSPECTIVES

IN YOUR PIECE about Olympic sprinters Tommie Smith and John Carlos giving the black power salute, you failed to show gold medal boxer George Foreman waving the American flag in the ring, which received widespread attention. I hope you will feature that picture—all in the interest of journalistic balance, of course.

JAMES CLIFFORD SR.
REDWOOD CITY, CALIFORNIA

TR'S ROUGH EDGES

LEWIS L. GOULD'S "Parties to History: Return of the Rough Rider" captures the acrimony between Teddy Roosevelt and William Howard Taft but falls victim to a slight bias toward Roosevelt. Gould contends that "Roosevelt believed that the federal government must do more to supervise large corporations." But, in fact, Taft's administration prosecuted nearly twice

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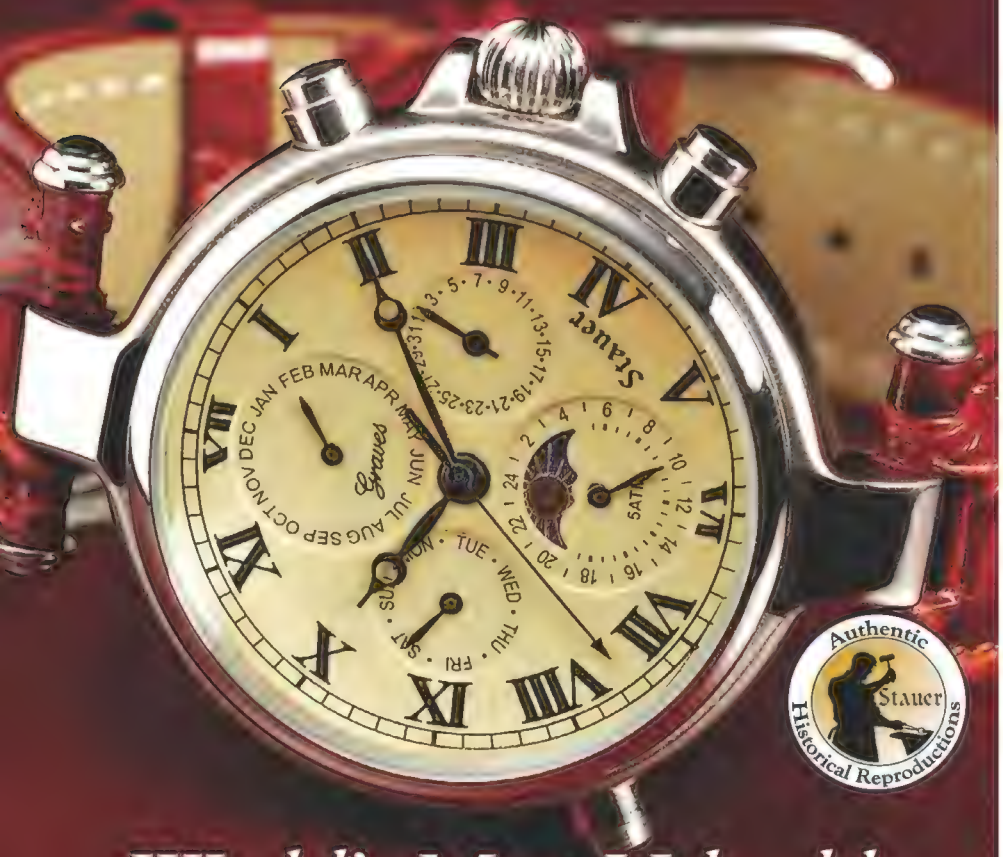

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as many antitrust cases in four years as Roosevelt's did in eight. And the Taft administration's successful antitrust suit against U.S. Steel galled Roosevelt because it cited as a cause a U.S. Steel acquisition to which Roosevelt had given tacit approval. Though Roosevelt's New Nationalism did presage reforms, which came about later, it also entailed ideas that would frighten civil libertarians today, and which were recognized as dangerous in 1912. Roosevelt's failing was his belief in a government of men like himself more so than in a government of laws.

CHRIS PARMA
NEW BRAUNFELS, TEXAS

"PARTIES TO HISTORY: The South Secedes Again" omits Henry Wallace's break with the Democratic Party to form the Progressive Party in 1948. Unlike the Dixiecrats, who opposed the party's civil rights platform, Wallace sought to end Jim Crow and, also, improve relations with Russia. Wallace, vice president under Franklin Roosevelt from 1940 to 1944, got over a million votes—making Truman's victory even more astounding.

JERE FRENCH
GULF BREEZE, FLORIDA

DIDDLEY RULES

AS A YOUNG BOY in St. Louis in the late 1950s and early 1960s, I loved rock 'n' roll, rhythm and blues and soul music. Bo Diddley [Tribute: "Who Do You Love?"], along with Little Richard, Chuck Berry, Jerry Lee Lewis and Elvis Presley, were music royalty. But in my mind, Bo Diddley's beat was always the best. I once put 50 cents into a jukebox (at 5 cents a play) and punched his "You Can't Judge a Book" ten times. When I saw him play a couple of years ago at Harrah's Casino (in the appropriately named Voodoo Lounge), he was still as powerful a musician. Americans can be thankful to men like Bo Diddley for giving us some of the best music in the world.

DAVID CHENEY
ST. LOUIS, MISSOURI

RUNNING ON THE WALL

"UP AGAINST THE WALL" brought back memories of our experience as the first people to run a full marathon on top of China's Great Wall. We were told by Chinese authorities that this was an ill-conceived idea and they would not be responsible for us in any way. But on August 5, 1985, we were driven out to Badaling at 4 a.m. to begin our run, which we completed in the afternoon. Later, we received a congratulatory note from Ronald Reagan. This experience was especially rewarding because one of us—Dick—had been diagnosed with cancer and told he had only months to live.

DICK AND JANICE MOLEN
POST FALLS, IDAHO

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The Cowboy in Winter

Gerald Mack lived the life—and photographer Sam Abell went along for the ride

BY ROBERT M. POOLE

TWO BLACK DOTS appeared in the distance, barely visible through swirling snow. Drawing closer, they resolved into recognizable forms: a man on a horse, a dog running alongside.

"That'll be Gerald," said Ken Perry, a rancher who had driven photographer Sam Abell high into the Little Belt Mountains of central Montana in 1985 to search for cowboys still working in the traditional style. "No one else would be up here" in the forbidding Montana winter.

In Abell's telling, he grabbed his camera, pushed open the door of Perry's pickup truck and stepped into the cold. There he began shooting pictures of a man named Gerald Mack, a horse named Sky and a dog named Cisco Kid.

The trio came to a stop in front of Abell. Introductions were made all around. Mack dismounted. Perry launched into a critique of Mack's horsemanship: *You're riding him too hot. You ought to know better.*

Mack hung his head. So did Cisco. The horse followed suit. Abell, a veteran of almost 40 *National Geographic* assignments, kept shooting. The elements of a picture were there, he sensed, but they had not fallen into place yet. He composed the frame, anticipating that Mack would eventually look up.

Sky snorted and shook off snow. Cisco looked up and pricked his ears. Mack raised his head. Abell squeezed off a picture. All three things happened at the same time, he says. "I was as set as a photographer can be. It was simply composing and waiting, which was how my father taught me to take pictures when I was a boy" in Sylvania, Ohio.

SAM ABELL / NATIONAL GEOGRAPHIC IMAGE COLLECTION

“No one else would be up here”—Montana’s Little Belt Mountains in winter—except Gerald Mack, with his horse, Sky, and dog, Cisco Kid, a rancher told the photographer.

"He'd throw you in the dirt if you didn't keep one leg on each side and your mind in the middle."

"Cowboys are pretty scarce in this part of the country now," says Mack (in 2008, with wife Laura). He owns a saddlery, where he makes "everything except for saddles."

The resulting image of man, horse and dog was published in the January 1986 issue of *National Geographic* and is included among 200 pictures in *The Life of a Photograph*, a retrospective of Abell's field work to be published this month. It was one of 25,000 images Abell gathered during a year following in the footsteps of the late artist Charles M. Russell, who, as a teenager in the 1880s, had come to Montana from St. Louis to start life as a cowboy. To evoke Russell's time and spirit, Abell traveled to the windswept plains where Russell learned to ride and rope, where he honed his skills as a painter and where he memorialized the twilight of an era. "It looks the way it looked in Russell's day," says Abell, 63. "There are grander and more sublime landscapes—to me. There are more compelling cultures. But what appeals to me about central Montana is that the combination of landscape and lifestyle is the most compelling I've seen on this earth. Small mountain ranges and open prairie, and different weather, different light, all within a 360-degree view."

"I was as set as a photographer can be," says Abell (in 1996).

The cowboy culture was still very much in evidence when Mack rode into Abell's viewfinder more than two decades ago. Men and women spent their days in the saddle, following cattle up to the high grasslands in spring and summer and down to the valleys in fall, and drove off to town for a dance and a beer only when the chores were done. That life required good horse work, an affinity for the lariat and hard labor, a stoic acceptance of blistering summers and soul-numbing winters, and the quickness and strength to chase down a calf, flip it over and apply the branding iron. When spring arrived, so did the bloody work of transforming young bulls into steers, so a strong stomach helped, too.

Gerald Mack did all of those things in his season. He was the winter-keeper on Ken Perry's ranch when he met Abell, riding miles of fence lines to make sure there were no gaps, chopping holes in the ice so the cattle could drink. And dreaming of spring.

Cisco and Sky have since gone off to the big ranch beyond the mountains, but Mack remembers them fondly. "Cisco was always with me," he says. "He loved to help with the cattle or anything else that needed doing. He died a few years after the picture. Sky lived another nine or ten years. He was a good horse, a real good horse, tougher than a boot." Mack pauses. "He was a little bit counterfeit, though."

Counterfeit?

"Meaning he'd throw you in the dirt if you didn't keep one leg on each side and your mind in the middle," says Mack. "He'd take advantage."

At 47, Mack still lives in Charles Russell country, a few miles from where he first encountered Abell. But "cowboys are pretty scarce in this part of the country now," he says. "All the big ranches are in Nevada, Oregon, Northern California."

Has he hung up his spurs?

"I was cowboying until 1999, working here and there," Mack says, "I still do a little, but not much." He owns a saddlery near Hobson, Montana, where he makes bridles, chaps, quirts and hobbles for out-of-state cowboys. "Everything except for the saddles. I do a lot of braiding, working mostly with rawhide," he says. "Most of my business is through the Internet." His Web site is www.mackcustomleather.com.

ROBERT M. POOLE *is a writer and contributing editor at* SMITHSONIAN.

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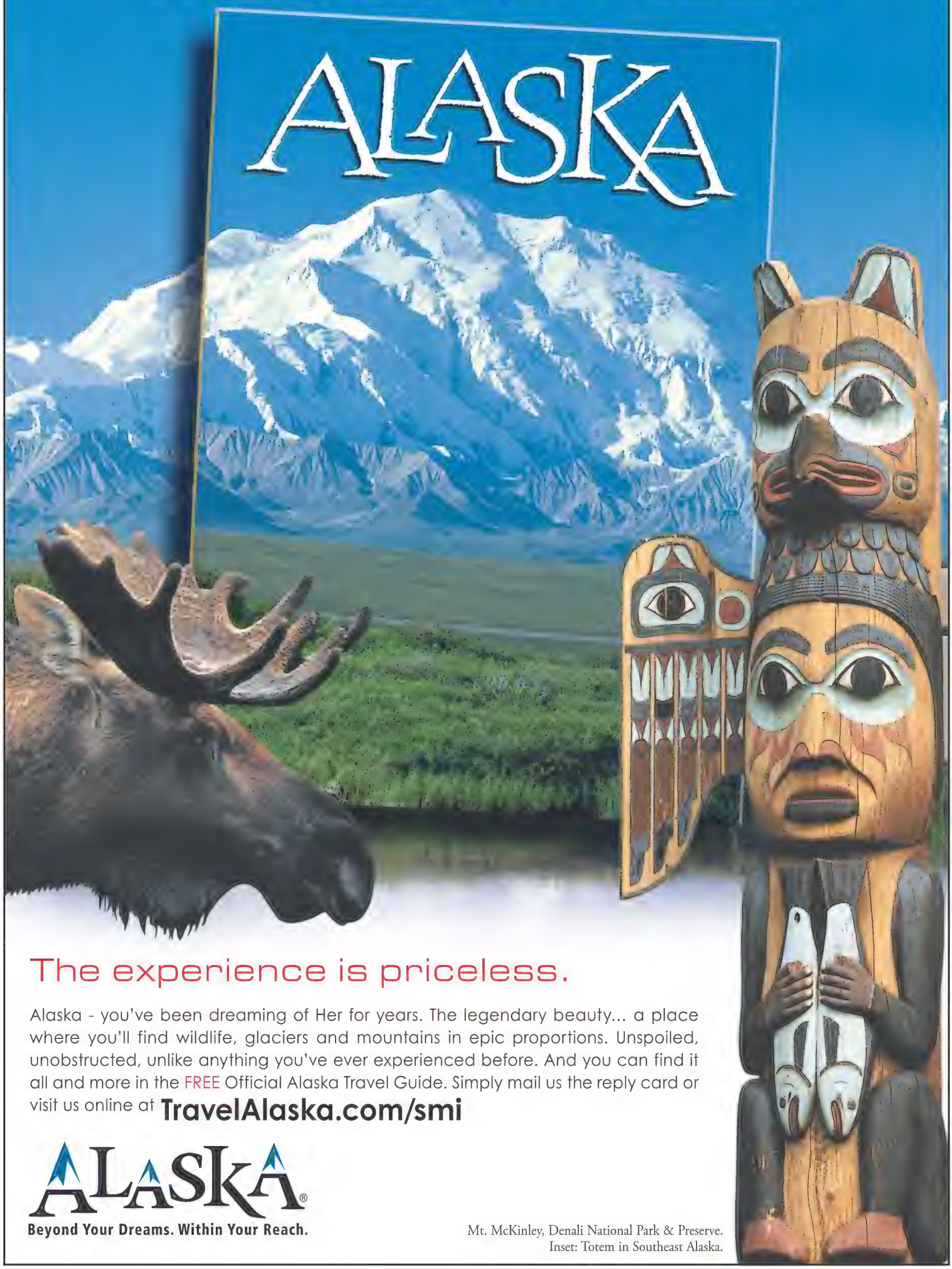

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Mt. McKinley, Denali National Park & Preserve.
Inset: Totem in Southeast Alaska.

WILD THINGS

LIFE AS WE KNOW IT

BY T.A. FRAIL, MEGAN GAMBINO, ANIKA GUPTA, LAURA HELMUTH AND JESSE RHODES

IT'S NOT EASY BEING GREEN (OR ORANGE)

Of 6,300 known amphibian species, one-third are vulnerable, endangered or critically endangered, say scientists in California (inset: a golden mantella frog). Tropical countries have the most amphibians and the most threatened species (below). The culprits? Habitat loss, global warming and the fungal disease chytridiomycosis.

Observed

NAME: The Atlantic molly, *Poecilia mexicana*
IN PRIVATE: Males prefer to mate with large females. They also often pursue females that they have seen other males pursue.
IN PUBLIC: When rival males are present, a male disguises his choice of mate by feigning interest in a different female.
IN THE LAB: Males went so far as to feign interest in a female of a different species, according to a new study by researchers from the University of Potsdam, Germany, and the University of Oklahoma. This bait-and-switch routine, the scientists say, may represent an attempt to direct rivals' attention away from the choicest female and avoid competing with other males.

A CHANGE IN STRATEGY

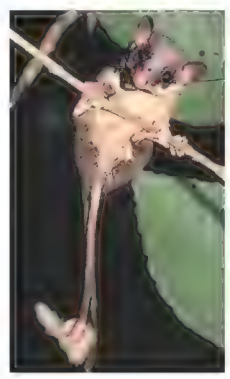
Milkweed plants defend themselves against caterpillars and other predators with toxins, spiky leaves and sticky latex. But a Cornell and Portland State University study of 38 milkweed species shows that the newest ones rely more on a different survival strategy: they regrow quickly after being damaged. Apparently resistance to predators is (relatively) futile.

THE BADDEST BITE

Australian-led researchers have found that a great white shark clamps down with a force of 2 tons. The most powerful bite known of any animal alive, that's 3 times the force of a lion and 23 times that of a person—though just a nip compared with the 12- to 20-ton bite of the extinct megalodon shark.

LONG-TAILED TIPPLERS

Pen-tailed tree shrews and at least six other small mammals in Malaysia imbibe naturally fermented bertam palm flower nectar, which is up to 3.8 percent alcohol, like beer. The animals are the only ones (aside from humans) known to drink regularly, say the researchers, from Germany and elsewhere, who saw no "motor incoordination or other behavioral signs of inebriation." The animals appear to have a high alcohol tolerance.



DLILLC / CORBIS; MAP: MICHELLE KOO / MUSEUM OF VERTEBRATE ZOOLOGY AT THE UNIVERSITY OF CALIFORNIA, BERKELEY; FRANS LANTING / CORBIS; BRANDON COLE MARINE PHOTOGRAPHY / ALAMY; WILDLIFE / PETER ARNOLD, INC. (MOLLY); ANNETTE ZITZMANN / UNIVERSITY OF BAYREUTH / HANDOUT / EPA / CORBIS

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The world's most dangerous birds have lost rain-forest habitat and are hitting the streets (above and below: Mission Beach, Queensland).

Invasion of the Cassowaries

Passions run high in an Australian town: Should the endangered birds be feared—or fed?

BY BRENDAN BORRELL

A **RIPE FRUIT PLUNKS** to the ground and rolls to the road at my left. That instant, the cassowary bursts from a tangle of ferns outside Clump Mountain National Park near Mission Beach, Australia. The bird's sharp beak is pointed roughly at my neck. Her eyes bulge. She probably weighs about 140 pounds, and as she thumps past me her red wattles swing to and fro and her black feathers give off an almost menacing shimmer. Local residents call her Barbara, but somehow the name doesn't fit the creature in front of me. She looks like a giant, prehistoric turkey—a turkey, however, that could disembowel me with a swipe of its nearly five-inch claws. Luckily, she just wants the mango, which she scoops up whole and mashes with her beak.

Although many of Australia's mammals are, to North Americans anyway, infamous oddballs—from the duck-billed platypus to the eucalyptus-munching koala—the cassowary is gaudy proof that its birds can be just as strange. The southern cassowary is related to the emu and native to the tropical forests of New Guinea and northern Australia. (Two other smaller cassowary species live in New Guinea.) Fewer than 1,500 southern cassowaries live in Australia, where they are endangered; much of their Queensland rain-forest habitat has been cleared for sugar cane and banana plantations.

While programs to protect koalas, which are not an endangered species, draw in millions of dollars in donations, cassowary conservation just squeaks by in the arid continent's last tropical outpost. But the ruggedly independent folk of Queensland feel a bond with

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Africa

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their local emblem of biodiversity—everything from stuffed toys to cassowary-themed wind chimes can be purchased along the Cassowary Coast—perhaps out of respect for a flightless creature that's able to eke out an existence despite suffocating heat and devastating storms. And like the cassowaries, Queenslanders have long felt underappreciated; indeed, some urbanites in Sydney and Melbourne refer to them as "banana-benders," as if they have nothing better to do than put the crook in tropical fruit.

But the ornery cassowary is not an easy creature to love. In fact, it ranks as the world's most dangerous bird, at least according to Guinness World Records. A cassowary can charge up to 30 miles an hour and leap more than 3 feet in the air. On each foot are three claws—one slightly curved like a scimitar, the other two straight as daggers—that are so sharp New Guinea tribesmen slide them over spear points. The last person known to have been killed by a cassowary was 16-year-old Phillip McLean, whose throat was punctured on his Queensland ranch in 1926. There have been plenty of close calls since: people have had ribs broken, legs cracked and flesh gashed.

In Mission Beach (pop. 992), two hours south of Cairns, cassowaries have lately come out of the forest, cruising the streets and looking, it seems, for trouble. They peck at bedroom windows, chase cars and tangle with pet terriers.

Townspeople are divided over what to do about the invasion. Many want the birds back in the forest. But others enjoy feeding them, even though that's against the law. They claim that the birds need the handouts: a 15-year drought, a building boom and Cyclone Larry in 2006 wiped out many of the area's native fruit trees, which were prime cassowary food. One woman told me she spends $20 per week on bananas and watermelons for a pair of local birds named Romeo and Mario. "I feed them," she said. "I always have and I always will."

Biologists say she's not doing the birds a favor. "A fed bird is a dead bird," the Queensland Parks and Wildlife Service insists on posters and brochures, underscoring the idea that luring the birds into town endangers them. Since the cyclone, some 20 cassowaries, out of a local population of perhaps 100, have died after being hit by cars or attacked by dogs. Wildlife wardens—clad in chain-saw chaps and groin protectors and wielding giant nets—regularly transport problem cassowaries to more suitable habitat.

"A fed bird is a dead bird," parks officials warn.

Cassowary fathers protect chicks (a 7-month-old) and teach them to forage.

To see how life in the cul-de-sacs of Mission Beach has affected the largest native land animal in northern Australia, I visited the Garners Beach cassowary rehabilitation facility five miles north of town. Steve Garrad, a conservation officer for the Australian Rainforest Foundation, was wearing a dirt-streaked khaki outfit and a pair of gaiters to ward off the region's infernal leeches. We entered a pen where a knee-high cassowary chick was zipping along like a teenager on a skateboard. Rocky had been plucked from a dog's mouth in South Mission Beach a few months earlier. Cassowary chicks are striped for camouflage, and Rocky seemed to vanish in the shady enclosure. We finally cornered him near an artificial pond. "It'll lose those stripes in three months' time," Garrad said, "and become a pretty ugly-looking mousy brown." In about a year, Rocky will burst into his adult colors and develop wattles and the species' most remarkable feature: the casque atop its head.

It's an odd structure, neither horn nor bone; it has a hard covering but is spongy inside and somewhat flexible overall. Some researchers have speculated that cassowaries use the strange protuberance as a crash helmet to deflect thick foliage while running through the jungle, or perhaps as a weapon for settling territorial disputes. Ornithologists in New Guinea have proposed another function: amplifier. They reported seeing cassowaries inflate their necks, vibrate their bodies and emit a pulsing boom that drops below the threshold of human hearing. "An unsettling sensation," is how one author described standing in front of a thrumming bird.

Cassowary males and females look pretty much the same when they're young, but females eventually grow about a foot taller, reaching some six feet. They start breeding at age 4 or 5 and can live 40 years or more. The birds are solitary aside from brief encounters during the breeding season. Females abandon their one-pound eggs soon after laying them, and males build a rudimentary nest on the forest floor and incubate up to five eggs for almost two months. After chicks hatch, they follow the male for six to nine months as he protects them from predators such as wild pigs and dogs, and guides them to fruit trees within a home range several hundred acres in size. Scientists studying cassowary scat have identified the seeds of 300 plant species, making the bird a key player in spreading rain-forest plants over great distances.

At the rehab center, Rocky retreated back into the shadows. He has made a full recovery after his encounter with the dog. Adult male cassowaries will adopt orphaned chicks, and Garrad hoped to find a surrogate dad in the wild that would rear Rocky. Garrad said it's sometimes hard to send the little ones off to an uncertain fate, but the best thing for wildlife is to return to the wild.

BRENDAN BORRELL *is based in Brooklyn.*

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THIS MONTH IN HISTORY

OCTOBER ANNIVERSARIES
MOMENTOUS OR MERELY MEMORABLE

BY ALISON McLEAN

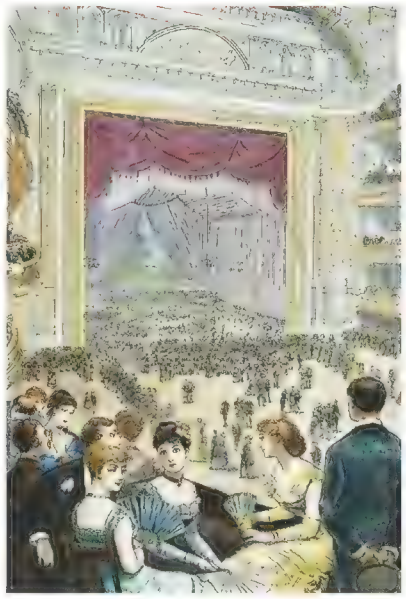
70 YEARS AGO
WE INTERRUPT OUR PROGRAM

Orson Welles, 23, and the Mercury Theatre inspire panic October 30, 1938, when thousands mistake their radio version of H. G. Wells' *War of the Worlds* for news of a Martian attack on New Jersey. Listeners across the country, perhaps tense over impending war in Europe, phone for help—Newark police report 2,000 calls. Says Welles: "I'm really quite shocked."

100 YEARS AGO
AMERICA'S TOP MODEL

It isn't his first car and won't be his last, but the Model T, which Henry Ford introduces in October 1908, secures his place in automobile history. The first car to be mass-produced with standardized parts, the four-cylinder, 20-horsepower vehicle sells initially for $850. The assembly line—new in 1913—turns out a Model T every 71 seconds, and by production's end in 1927 more than 15 million "Tin Lizzies" are sold, fulfilling Ford's dream of "a motor car for the great multitude."

125 YEARS AGO PUTTING ON ARIAS



The curtain rises on the first performance of New York City's Metropolitan Opera on October 22, 1883. Founded by "new money" millionaires snubbed by the old guard at the Academy of Music, the Opera opens with Gounod's *Faust*—sung in Italian, as are all the first season's works. Critics note the lavish "exhibition of the audience" and pan the acoustics, but by 1910 the Met has become America's premier opera company. It moves to Lincoln Center in 1966; today more than 800,000 people attend some 200 performances each year.

50 YEARS AGO CHARGE IT

Dr. Ake Senning performs the first cardiac pacemaker implantation in a person in Stockholm, Sweden, October 8, 1958. External pacemakers, used to regulate heart rhythms since 1950, limited patient movement and provoked infection. Senning and engineer Rune Elmquist, at work on an implantable model, are urged by the wife of patient Arne Larsson, 43, to try it in her husband. The first implant lasts eight hours, the next, a few weeks. Before his death at 86 in 2001, Larsson will have more than 20 pacemakers. Senning dies in 2000, age 85.

25 YEARS AGO MEDICAL EMERGENCY

After a Marxist coup on the socialist Caribbean nation of Grenada, President Ronald Reagan orders U.S. troops to invade the island on October 25, 1983, citing fears for the safety of American medical students there and an arms buildup. Critics call the concerns exaggerated. The action is popular in the United States, but condemned abroad.

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The celebrated poet succumbs to Houston's humid charms **BY MARK DOTY**

IT DOESN'T TAKE LONG in Houston to realize that the beauty of the place is in the sky. The swamplands and fields that became the fourth-largest city in the country are almost entirely flat, and the availability of cheap land and an exuberant appetite for sprawl have kept most of the town low-slung and horizontal. So the sky seems vast, and from any parking lot you can watch big white towers of cloud sail up from the Gulf of Mexico 50 miles to the south as if they were navigating the ship channel

Amid the city's ribbons of freeway and corporate spires, says the author (left), the sky offers "a huge, open relief."

ERIN TRIEB / GETTY IMAGES; JOHNNY HANSON / WPN

beneath them. The expanse of sky is so wide, there's often more than one thing going on. Rain may darken the western rim while a fierce sun illuminates cloud towers in the center and a brilliant blue fills the east. How can you forecast the weather when it's doing three things at once?

I've only just started describing the place, and already I've had to employ a whole vocabulary of scale: *largest*, *vast*, *big*, *wide*. Indeed the sky's a huge, open relief from all the busyness below, but that cluttered landscape is itself immense. Houston's a universe of visual detail. Drive down the freeway (this is a city built on the premise of the personal vehicle, a private sphere to propel you through public spaces) and you become a reader of the telegraphic messages the city pulses out all day, all night: Bail Bonds, Paternity Tests, Taqueria, Weight Loss, Wireless, Margaritas, No Credit? Bad Credit?, God's Got a Plan for You, Gentlemen's Club, Nails, BBQ, Christian Singles. The city's welter of signs is a crazy patchwork of human desires given material form.

I've been coming to Houston for a decade now, teaching one semester each year in one of the country's best creative writing programs. I used to joke with my friends in the Northeast that every fall I descend into Texas like Persephone, only to return, come spring, into the light. But after a few years, my feelings about the place shifted. I can tell you everything that's wrong with it: no zoning, bad air quality, impossible climate. Tiny, malicious mosquitoes so tough and persistent you get bitten on Christmas Day. Poor drainage, so that the ubiquitous storms create floods of biblical proportion. It's harder to name just what it is about the place that's gotten under my skin, holds my attention here, makes me want to come back.

In spite of its international petroleum-based economy, its layered ribbons of freeways and corporate spires, Houston still feels Southern. Imagine a hybrid of New Orleans and Los Angeles, with a dash of Mexico City thrown in. True, it doesn't have the regional feel it once did, but you can still find it in my neighborhood, Montrose, an arts/alternative/liberal district near the center of town. Here the city's splendid tradition of patronage is on its best display, so the great old live oaks thrust their bowing branches out beside the Cy Twombly Gallery and the Rothko Chapel. The limbs dip perilously toward the ground, and the roots heave the sidewalks beneath them into little concrete alps, but since nobody walks anywhere it doesn't make much difference. In summer the trees resound with cicadas, like electronic versions of the Mormon Tabernacle Choir chorusing an insanely repetitive song. Gangs of bronzy black birds—boat-tailed grackles—prefer smaller trees in busier areas; they like grocery store parking lots and the drive-through lanes at the Taco Cabana, and they shriek and holler long into the night, as if in avian parallel to the traffic below. They're the loudest part of a plethora of urban wildlife: opossums, raccoons, the occasional snake slithering across the road, a sadly large population of stray dogs. Coyotes roam the cemetery north of Buffalo Bayou, where Howard Hughes is buried. All over town, tiny green lizards hold their heads up with notable alertness. My friend Mark's iguana, a giant version of those local denizens, escaped into a wisteria arbor and remained there for months before finally consenting to be lifted down.

Southern culture still lingers. There is, for instance, conversation with strangers. In my other life, in New York City, I'll walk into a deli and the

That's a typically Houston attitude: What's so hot about yesterday? Let's see who we can be *now.*

Imagine, the author suggests, a hybrid of New Orleans and Los Angeles: He lives in Montrose, a neighborhood that boasts such attractions as outdoor socializing (left: the West Alabama Ice House) and an abundance of arts (right: the Cy Twombly Gallery).

ERIN TRIEB / GETTY IMAGES; ERIN TRIEB / GETTY IMAGES [PAINTING IN BACKGROUND: CY TWOMBLY'S *UNTITLED* (SAY GOODBYE CATULLUS, TO THE SHORES OF ASIA MINOR) (A PAINTING IN THREE PARTS) (ROME/LEXINGTON, VIRGINIA), 1994]

guy behind the counter will shout, NEXT, and I shout back, COFFEE WITH MILK NO SUGAR. This brusque exchange is not rude, though visitors sometimes think otherwise; it is designed to make life easy for a large number of people, part of the unwritten civil contract that makes an enormous city work. If the server or I behaved this way in Houston, we would be seen as rude or crazy or both. Our exchange would more likely go something like this:

— How are you today?

— I'm doing well, thank you, and I sure am glad it's not as warm as it was.

— Oh, me too, I was just melting in that. Now what can I get for you?

I understand that this is simply social convention, so maybe I shouldn't find it so touching, but I do. When I first arrived, I went to a Whole Foods store in my new neighborhood to order some dinner from the deli there, and after I'd asked for some grilled chicken breasts the server said, "Would you like some green beans with that?" in a warm East Texas inflection, and I found myself tearing up then and there, almost unable to say yes. Hers was a version of the voice of my grandmother, who was from Tennessee and spent her life pleasing people with food. Would you like some green beans with that? meant I love you with all my heart, and what can I do to make you happy?

This particularly Southern social fabric, with its suggestion of a slower pace of life, no hurry in all the world, is eroding. That's not entirely a bad thing; in comes new energy, more urbane possibilities, new futures. Since Houston is about transformation, it seems by nature to be a city without much allegiance to history. If there were a motto on the town flag, I think it might read NO NOSTALGIA.

The city's a world capital of erasure. I'll often go away for a few days and return to find a familiar building gone. In fact, it's so common to drive down some street and find the built landscape changed that one loses the very habit of familiarity. I find it almost impossible, in a way that's not true of any place else I've lived, to remember what's gone. What stood on that corner last year? What was here before they built those new condos with the coffee/wine/tapas bar on the first floor? The past starts to seem irretrievable. There's a neighborhood near downtown called Freedmen's Town, for instance, that gained its name from a 19th-century community of former slaves. The streets were lined with small, orderly houses of the kind called "shotgun," one room opening into the next, so that if the front door were open you could see—or fire a shotgun—all the way out the back. These repositories of history are almost entirely gone now. In a flash, after decades in which the exurbs seemed to be most peoples' goal, it became fashionable to live downtown. So the old neighborhood disappears, to be replaced by something more anonymous, and while I tend to think the destruction of the past is regrettable, I admit I've had my preconceptions brought up short.

A friend asked a black student if he'd visited the city's historical African-American enclaves, and the student said, "Why would we want to see that?" That's a characteristically Houstonian attitude: What's so hot about yesterday? Let's go forward, let's see who we can be *now*. A historical preservation organization has been raising concerns that a handsome Art Deco theater in the city's River Oaks neighborhood will be torn down to build a high-rise. But I've come to understand the principle at work, if not its application: Houston is about the new, about transformation and ambition, the making and remaking of the self and the environment. Of course we make mistakes, but in ten years they're gone, and there's space for the next set of possibilities.

Whatever they are—our hopes, successes and mistakes—they're put in perspective by what Shakespeare called "this brave o'erhanging firmament." When the clouds conjoin and a storm pushes up from the Gulf, look out. I've seen a tornadic tropic fury pour in, tingeing the day an evil green, and the whole city suddenly resembles some underwater kingdom. Wiser drivers pull over and wait for the storm to pass. The foolhardy plunge forward, plowing through channels of rainwater filling the intersections. Sometimes whole school buses float away. Everyone hopes for reprieve. Which won't be long in coming, so that we can forget about the sky and return to the theater of our aspirations, the daily traffic, this new city's strange promises and invitations.

Talking to strangers (the author, seated, at Barnaby's Cafe) is more than acceptable.

JOHNNY HANSON / WPN

MARK DOTY's *most recent books include* Fire to Fire: New and Selected Poems *and his memoir* Dog Years.

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Around the Mall

SCENES AND SIGHTINGS FROM THE SMITHSONIAN MUSEUMS AND BEYOND

JOHN LEE / AURORA SELECT

GET YOUR GAME ON

AT THE SMITHSONIAN AMERICAN ART MUSEUM, TECH-SAVVY PLAYERS PURSUE A BIZARRE TRAIL OF CLUES IN THE ALTERNATE REALITY GAME "GHOSTS OF A CHANCE"

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"Spirits are taking up residence in the museum; nothing is as it seems, even in this photograph," says game designer John Maccabee.

FROM THE CASTLE

Life Lines

G. WAYNE CLOUGH

I HAVE ALWAYS LOVED Van Gogh's work. For years I have admired his *Starry Night*. One day at New York City's Museum of Modern Art, I turned a corner and there it was, so spectacular I almost had to sit down. I could see the brush strokes and sense the artist's emotion as he created the painting. It was an overwhelming experience that could have been improved only if I'd been able to pursue my Van Gogh interests further, either on the spot or later at home. Today, that is becoming increasingly possible for anyone with a computer, anywhere on the globe, thanks to digitized museum collections and museum libraries.

***Paradisea raggiana* is one of the many images at the Galaxy of Knowledge Web site.**

This summer I attended a National Academies planning meeting on libraries and museums in the 21st century. A vice president of a leading software company argued that academic libraries as we've traditionally known them are a "dying breed," too often pursuing a "lost cause." Fortunately, at their best, museum libraries are quickly transforming themselves—from information providers to connectors, of people with common interests with each other, and with millions of images of scientific specimens, historic artifacts, works of art and all kinds of digitized documents about them. The iPhone generation is "visiting" museums in many new ways. "Real artifacts," explained Museum 2.0 blog founder Nina Simon, "are gaining new lives in personal memory sites, blogs and collections-based social networks."

One dramatic example of the new digital diffusion is the Encyclopedia of Life (EOL), which is building Web sites for each of the 1.8 million known species on earth. The EOL already has links to 7.4 million pages of books and journals via the Biodiversity Heritage Library portal (www.biodiversitylibrary.org). The lead partner in this fast-growing portal is the Smithsonian Institution Libraries (SIL), which this year celebrates its 40th anniversary. Actually 20 libraries in one system, it holds more than 1.5 million volumes, including 50,000 rare books, 10,000 historic manuscripts and over 3,000 electronic journals and databases. Its rich Galaxy of Knowledge Web site (www.sil.si.edu) is a gateway to the Libraries' collections. SIL began its digital library in 1996; today it contains items from one of the world's largest collections of trade literature, American industry catalogs from 1875 to 1950, and 15,000 pages of reports about collections from the 1838-42 U.S. Exploring Expedition.

This winter I will host a group of leading creators of interactive learning experiences and online games to help us imagine the future, including the use of high-definition 3-D holograms. The Smithsonian's digital libraries will continue to enhance our visitors' experiences with real objects. And will provide the next best thing to being here to a huge audience worldwide.

G. WAYNE CLOUGH *is Secretary of the Smithsonian Institution.*

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G. Wayne Clough

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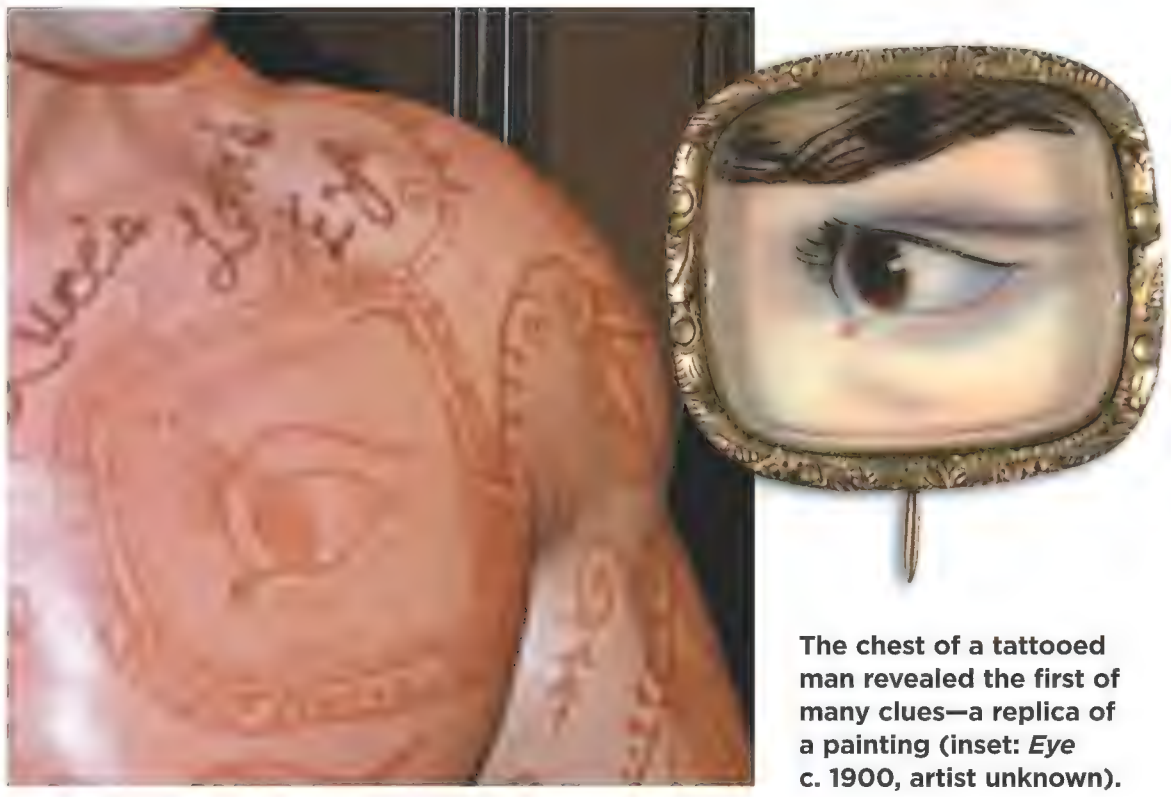
Photos courtesy of the Mountain Echo Newspaper

ART OF THE GAME

PAINTINGS—AND EVEN TATTOOS—HOLD CLUES TO SOLVING A PUZZLE



The chest of a tattooed man revealed the first of many clues—a replica of a painting (inset: *Eye* c. 1900, artist unknown).

IT BEGAN WITH the man who would not talk about his tattoos.

He walked bare-chested into an academic conference at the Radisson Hotel in Boston, dull red tattoos crawling all over his chest and arms. He circled the room, posing, for three minutes. Then without a word, he left.

The July 19 event was unusual even for people used to unusual happenings. The conference was ARGfest-o-Con 2008, and the 100 people there designed, played or studied alternate reality games (ARGs), in which players use clues from a variety of media to solve puzzles and participate via the Internet in an evolving story.

Although the attendees didn't realize it at the time, the tattooed man was the initial clue in the first-ever ARG sponsored by a major museum: the Smithsonian American Art Museum's "Ghosts of a Chance." Once word of the game spread, people all over the world logged on to Unfiction.com, a Web site where ARG players swap clues and speculate on a game's direction.

Using the search engine Google, a player found out that one of the man's tattoos, labeled "Luce's Lover's Eye," matched a painting at the museum's Luce Foundation Center for American Art. On the painting's Web page, a speech from *Romeo and Juliet* appeared. Clicking a link in the text led to GhostsofaChance.com. There, players were asked to call a phone number and record an incantation, the three witches' "toil and trouble" lines from *Macbeth*. For a few days, there were no clues—except for the site's countdown to September 8, the official start date.

In an ARG, initial clues can come from many sources, including a live event like the tattooed man's appearance, a video ad or even this magazine. Once the game is on, designers, called PuppetMasters, place clues in other forms of media such as posters, TV commercials and Web sites to attract a wider audience. Anyone can register to play, free, at Unfiction.com.

Invented in 2001 by a couple of tech wizards at Microsoft, ARGs usually last six to eight weeks and require lots of teamwork, if only because the obscure clues can be hidden in computer codes, foreign languages or complex riddles. The games have been used as viral marketing to promote TV shows, including "Alias" and "Lost," as well as the video game Halo 2.

"Ghosts of a Chance" was designed by John Maccabee, a former novelist whose San Francisco-based company, CityMystery, specializes in the growing field of educational ARGs. In "Ghosts," the premise is that some of the artworks in the Luce Center collection have become haunted. Players have to find out who the ghosts are, which artworks are infected, and how to thwart the undead scourge and save the collection. Along the way, players will influence the story itself, either when Maccabee changes it in response to their Unfiction comments or through two nonvirtual events at which gamers interact with hired actors. "ARGs have beginnings, middles and ends, so they are

JUKEBOX

MUSICAL MUDSLINGING Before TV came on the scene, presidential candidates relied on songs for negative advertising. Consider this 1889 ditty in support of Benjamin Harrison: "Ben's a man who bravely went for his native land to shoot / Whereas Grover Cleveland skulked behind the nearest substitute." *Presidential Campaign Songs*, from Smithsonian Folkways (1999), features tunes spanning 40 elections. The time-honored tactics of campaigning are all represented, from celebrity endorsements (a Charles Lindbergh testimonial in favor of Herbert Hoover in 1929) to fearmongering (fire, pistols, guns, swords, knives and famines are threatened in a 1828 song if John Quincy Adams is not elected). And you thought dirty politics was new? Hear a few songs at Smithsonian.com/jukebox. ANIKA GUPTA

Read about the game's grand finale at Smithsonian.com/arg

HL BREWER; (INSET) *EYE*, CIRCA 1900. UNIDENTIFIED ARTIST / SAAM; GRANGER COLLECTION, NEW YORK

real stories," Maccabee says. "But still the players are interacting with you and taking the game in a direction that they want to take it."

Museum officials see "Ghosts" as a new way to engage visitors. "People who are visiting museums now are looking for more than just going to a gallery and looking at the things on the wall," says Georgina Bath, the Luce Center's program coordinator. "The ARG is one way of creating a layer of interactivity in the space without putting the artworks at risk." ARGs might also attract young people who are less likely to go for the traditional museum experience. "I hope [players] see the museum as somewhere they can come back and spend more time," Bath says.

In coming weeks, gamers will discover that the artwork by Herbert Singleton (detail, above) plays a recurring role.

"One of the great things about ARGs is that they change a display space to an adventurous, active space," says veteran game designer Jane McGonigal, of the Institute for the Future, a nonprofit research center. Since people at a museum already share a common interest in the collection, she adds, the "seed of a community" exists.

The Luce Center plans to keep "Ghosts" around even after its grand finale on October 25. The museum has commissioned a version of the game that a group of visitors could play onsite in one afternoon.

McGonigal says ARGs work best when players solve real problems. That should bode well for ARGs based at museums, since, she adds: "Any museum is going to have some unsolved mysteries." ANIKA GUPTA

Q&A

BONNIE ERICKSON designed and built the inimitable Miss Piggy in 1974 for an early "Muppets" television special, produced by Jim Henson. Puppets, props and storyboards from Henson's prolific career are featured in the traveling exhibit "Jim Henson's Fantastic World." Anika Gupta spoke with Erickson.

YOU'VE BEEN DESIGNING PUPPETS FOR YEARS. WHAT ATTRACTS YOU TO THEM? The creation of worlds—the whole process of designing characters, putting together a back story, giving the characters an environment in which they can thrive and casting performers who can bring them to life.

WHY DO PUPPETS APPEAL TO ADULTS AS WELL AS CHILDREN? They've been a tradition across the world for thousands of years as a form of storytelling. But, until recently, they haven't been appreciated in the United States. Now, however, puppetry is finding a niche in the arts—dance, theater and even opera. I think people appreciate the performers' skill as well as the artistry of the puppets themselves. We owe a lot of that to [Muppets creator] Jim Henson's vision.

WHO INSPIRED THE CHARACTER OF MISS PIGGY? My mother used to live in North Dakota, where Peggy Lee sang on the local radio station before she became a famous jazz singer. When I first created Miss Piggy, I called her Miss Piggy Lee, as both a joke and an homage. Peggy Lee was a very independent woman, and Piggy certainly is the same. But as Piggy's fame began to grow, nobody wanted to upset Peggy Lee, especially because we admired her work. So, the Muppet's name was shortened to Miss Piggy.

Visit Smithsonian.com/erickson to read more of our interview with Bonnie Erickson

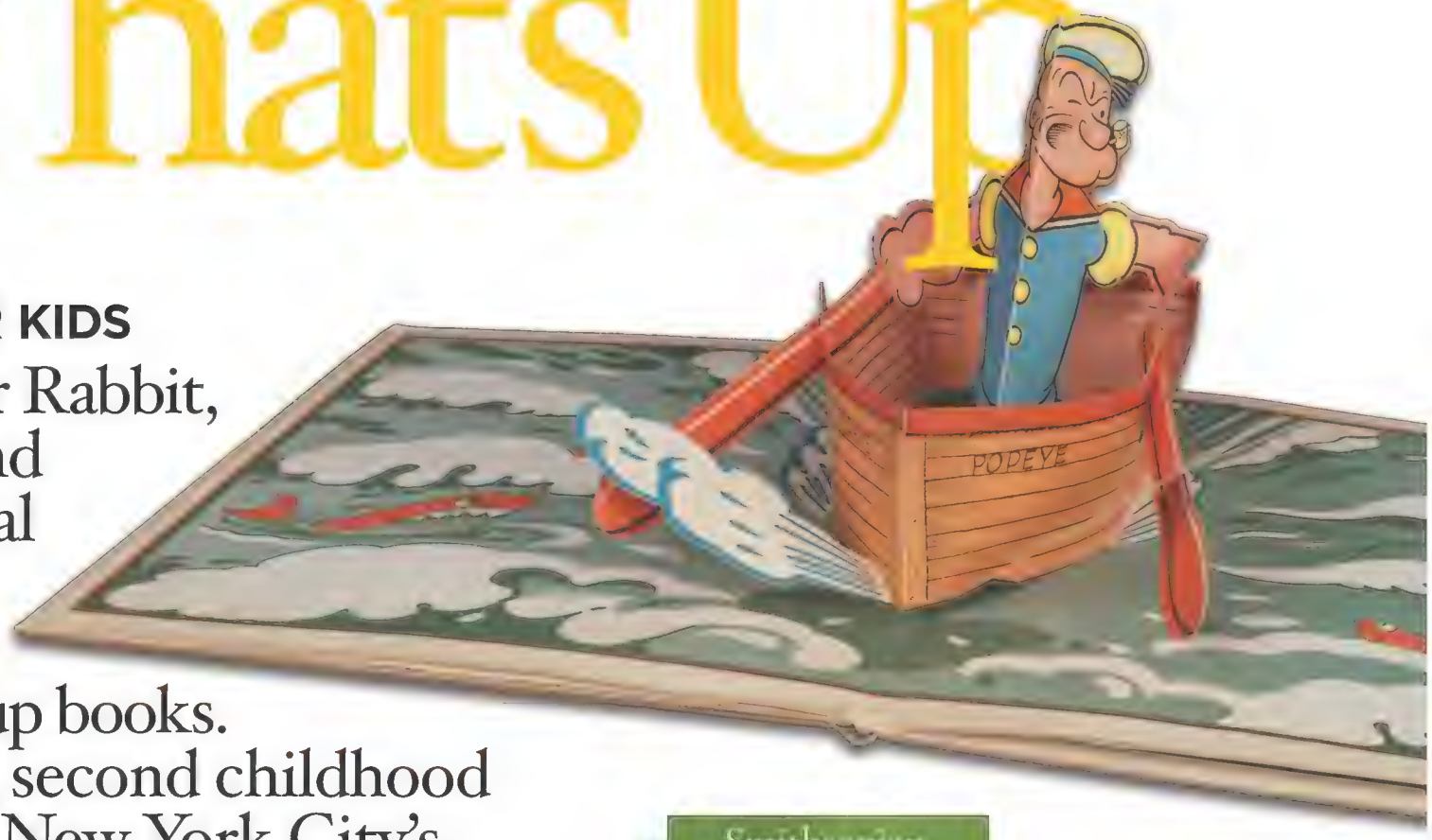
MAKING HISTORY

DARK KNIGHT Bats are a big help to plants because they devour leaf-munching insects, according to researchers at the Smithsonian Tropical Research Institute in Panama. The scientists conducted their investigation by covering plants with plastic and wire-mesh structures that let insects in but kept large bug-eating predators out. The research team then compared three groups: plants that were covered during the day (when birds are looking for food); plants that were covered at night (when bats are awake and hungry); and a control group of uncovered plants (open to all comers). The result? Plants sealed off from the bats had more leaf damage and were more infested with insects than the other two groups. While previous studies have extensively documented the beneficial relationship between birds and plants, scientists "have completely overlooked the important ecological role of insect-eating bats," says Margareta Kalka, the study's lead author. The Smithsonian research reveals that bats might do more to help sustain forests than we previously thought, says Kalka. KENNETH R. FLETCHER

Smithsonian scientists say bats (devouring an insect) are a big help to plants.

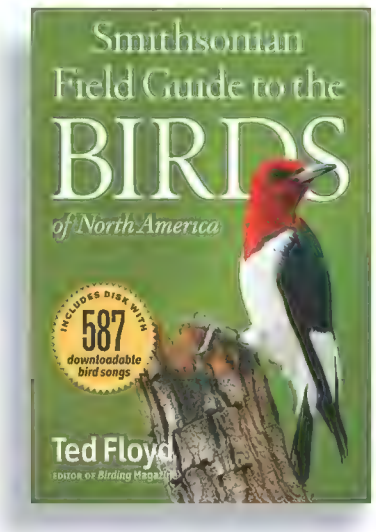
WAYDE HARRISON; *GLAD YOU DEAD YOU RASCAL YOU*, CIRCA 1990. HERBERT SINGLETON / SAAM (DETAIL); CHRISTIAN ZIEGLER

What's Up



NOT JUST FOR KIDS

Popeye, Peter Rabbit, Cinderella and other fictional heroes leap out from vintage pop-up books. Experience a second childhood October 3 at New York City's Cooper-Hewitt, National Design Museum.



IN-FLIGHT MUSIC

Do you know a crow from a crane? Want to whistle like a willet? Ted Floyd's *Field Guide to the Birds of North America* comes with a DVD of 587 bird songs and offers detailed profiles of more than 750 species.

SEEING THE LIGHT

The annual Green Light competition features exceptional art by people with disabilities from ages 16 to 25 (below: 2008 award winner Elise Mravunac's *You're Doing It Wrong*). Artists from across the nation will exhibit their pieces at the S. Dillon Ripley Center until January 4, 2009.

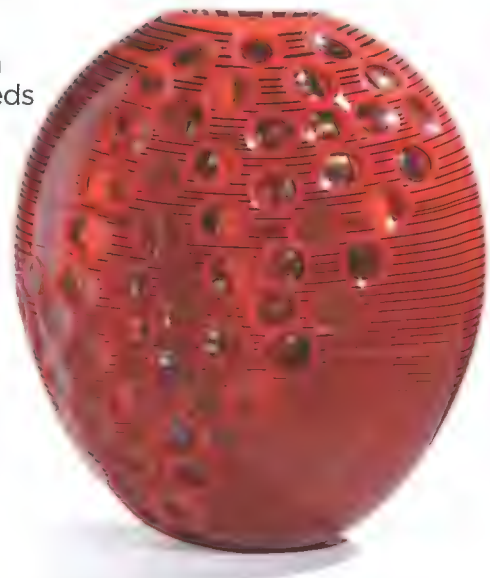
HATCHBACK

Since 1879, Nashville's Hatch Show Print has designed stylish posters that reimagine icons (below: Johnny Cash). A Smithsonian traveling exhibition of 126 prints opens October 11 at Seattle's Experience Music Project.

GLASS ACT

Over his 40-year career, glass-blowing master Lino Tagliapietra has spun hundreds of delicate-colored glass items, including chalices, lamps, vases and luminous works of art (right). View 140 of his creations at the Renwick Gallery until January 11, 2009.

BY ANIKA GUPTA



ANDREW GARN / COOPER-HEWITT NATIONAL DESIGN MUSEUM, SI; SI BOOKS; ELISE MRAVUNAC / RIPLEY CENTER, SI; SITES; RUSSELL JOHNSON AND JEFF CURTIS / RENWICK GALLERY / SAAM

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For an insider's look at the Smithsonian, visit Smithsonian.com/mallblog

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OCTOBER 2008 · VOLUME 39, NUMBER 7

NEW LIGHT ON

THE FIRST DIG IN 44 YEARS WITHIN THE INNER CIRCLE CHANGES OUR VIEW OF WHY—AND EVEN WHEN—THE MONUMENT WAS BUILT

By Dan Jones

STONEHENGE

PHOTOGRAPHS BY MICHAEL FREEMAN

Carved sarsens—enormous blocks of hard sandstone—were used to build the towering trilithons that dominate the landscape of Salisbury Plain in southern England. But archaeologists Timothy Darvill and Geoffrey Wainwright believe the smaller so-called bluestones hold the key to unraveling Stonehenge's mystery.

The dig at Stonehenge ended as it began, with a blessing from modern-day Druids (below). Definitive archaeological data about the monument are scarce, partly because of the reluctance of preservationists to permit activities that could damage the prehistoric megaliths. Darvill and Wainwright had two weeks to excavate a small trench (right).

THE DRUIDS arrived around 4 p.m. Under a warm afternoon sun, the group of eight walked slowly, to the beat of a single drum, from the visitor's entrance toward the looming, majestic stone monument. With the pounding of the drum growing louder, the retinue approached the outer circle of massive stone trilithons—each made up of two huge pillars capped by a stone lintel—and passed through them to the inner circle. Here they were greeted by Timothy Darvill, 50, professor of archaeology at Bournemouth University, and Geoffrey Wainwright, 70, president of the Society of Antiquaries of London.

For two weeks, the pair had been leading the first excavation in 44 years of the inner circle of Stonehenge—the best-known and most mysterious megalithic monument in the world. Now it was time to refill the pit they had dug. The Druids had come to offer their blessings, as they had done 14 days earlier before the first shovel went into the ground. "At the beginning we warned the spirits of the land that this would be happening and not to feel invaded," said one of their number who gave his name only as Frank. "Now we're offering a big thank-you to the ancestors who we asked to give up knowledge to our generation."

The Druids tossed seven grains of wheat into the pit, one for each continent, and offered a prayer to provide food for the world's hungry. The gesture seemed fitting, given the nature of the excavation; while other experts have speculated that Stonehenge was a prehistoric observatory or a royal burial ground, Darvill and Wainwright are intent on proving it was primarily a sacred place of healing, where the

DAN JONES *freelances from Brighton, England. Photographer* **MICHAEL FREEMAN** *is based in London.*

sick came to be cured and the injured and infirm restored.

Darvill and Wainwright's theory rests, almost literally, on bluestones—unexceptional igneous rocks, such as dolerite and rhyolite—so called because they take on a bluish hue when wet or cut. Over the centuries, legends have endowed these stones with mystical properties. The British poet Layamon, inspired by the folkloric accounts of 12th-century cleric Geoffrey of Monmouth, wrote in A.D. 1215:

The stones are great;
And magic power they have;
Men that are sick;
Fare to that stone;
And they wash that stone;
And with that water bathe away their sickness.

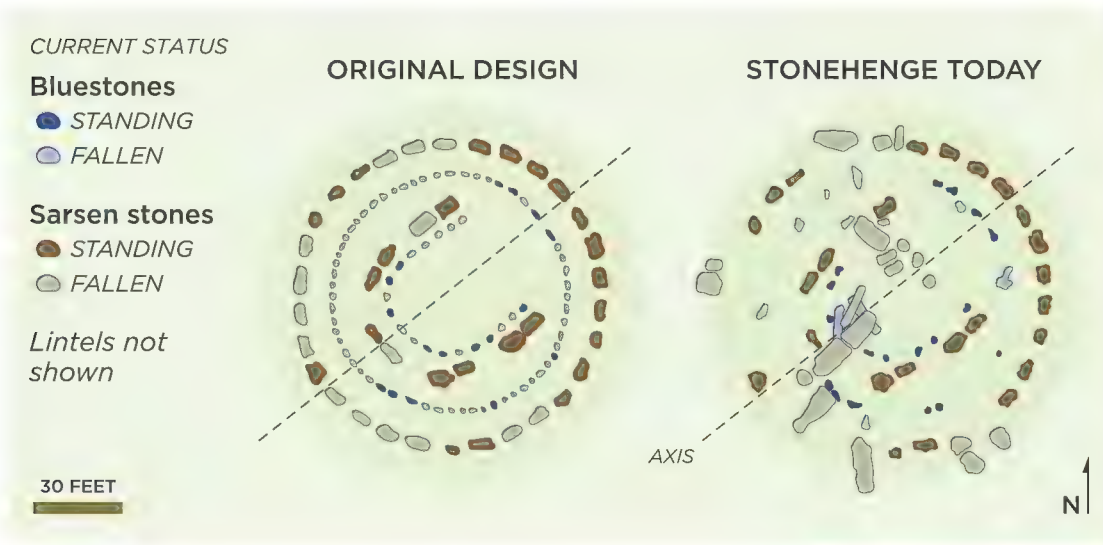
We now know that Stonehenge was in the making for at least 400 years. The first phase, built around 3000 B.C., was a simple circular earthwork enclosure similar to many "henges" (sacred enclosures typically comprising a circular bank and a ditch) found throughout the British Isles. Around 2800 B.C., timber posts were erected within the enclosure. Again, such posts are not unusual—Woodhenge, for example, which once consisted of tall posts arranged in a series of six concentric oval rings, lies only a few miles to the east.

Archaeologists have long believed that Stonehenge began to take on its modern form two centuries later, when large stones were brought to the site in the third and final stage of its construction. The first to be put in place were the 80 or so bluestones, which were arranged in a double circle with an entrance facing northeast. "Their arrival is when Stonehenge was transformed from a quite ordinary and typical monument into something unusual," says Andrew Fitzpatrick of Wessex Archaeology, a nonprofit organization based in Salisbury.

The importance of the bluestones is underscored by the immense effort involved in moving them a long distance—some were as long as ten feet and weighed four tons. Geological studies in the 1920s determined that they came from the Preseli Mountains in southwest Wales, 140 miles from Stonehenge. Some geologists have argued that glaciers moved the stones, but most experts now believe that humans undertook the momentous task.

But how? Wainwright and Darvill say that while they don't know exactly, the movement of large stones is not that rare in human history. Huge blocks were being shifted and erected by Neolithic people in France at around the same time to build tombs—not to mention the pyramids constructed by the Egyptians. "It isn't a problem," says Wainwright. "Societies in the mid-third millennium B.C. were quite capable of moving great quantities of timber and heavy stones across the country for many miles."

The most likely route would have required traversing some 250 miles—with the stones floated on rafts, then pulled overland by teams of men and oxen or rolled on logs—along the south coast of Wales, crossing the Avon



TRAVELING BLUES

The Stonehenge bluestones, which may have been thought to have healing powers, were carried to the site from Wales—by boats or rafts along the Welsh coast, or around the southwest tip of England (dotted line, right). The stones were first arranged in a double circle (above at left: dark blue stones are still standing, while fallen or missing stones are pale blue). Today, thousands of years later, the original pattern can still be discerned (above at right and photo).

DIAGRAMS: GUILBERT GATES (SOURCE: ENGLISH HERITAGE'S *STONEHENGE AND NEIGHBOURING MONUMENTS*); MAP: GUILBERT GATES (SOURCES: ENGLISH HERITAGE'S *STONEHENGE AND NEIGHBOURING MONUMENTS* AND *THE MAKING OF STONEHENGE* BY RODNEY CASTLEDEN)

River near Bristol and then heading southeast to the Salisbury Plain. Alternatively, the stones may have come by boat around Land's End and along the south coast of England before heading upriver and finally overland to Stonehenge. Whatever the route and method, the immensity of the undertaking—requiring thousands of man-hours and sophisticated logistics—has convinced Darvill and Wainwright that the bluestones must have been considered extraordinary. After all, Stonehenge's sarsens—enormous blocks of hard sandstone used to build the towering trilithons—were quarried and collected from the Marlborough Downs a mere 20 miles to the north.

The two men have spent the last five years surveying the Preseli Mountains, trying to ascertain why Neolithic people might have believed the stones had mystical properties. Most were quarried at a site known as Carn Menyn, a series of rocky outcrops of white-spotted dolerite. "It's a very special area," says Wainwright, himself a Welshman. "Approaching Carn Menyn from the south you go up and up, then all of a sudden you see this rampart composed of natural pillars of stone."

Clearly Carn Menyn inspired the ancients. Gors Fawr, a collection of 16 upright bluestones arranged in a circle, sits at the bottom of a Carn Menyn hill. And Bedd Arthur, another nearby bluestone structure, coincides almost precisely with the pattern at Stonehenge. Darvill even suggests that both might have provided inspiration for key components of Stonehenge.

But Darvill and Wainwright say the real turning point came in 2006, when the pair looked beyond Carn Menyn's rock formations and began studying some springs around the base of the crags, many of which had been altered to create "enhanced springheads"—natural spouts had been dammed up with short walls to create pools where the water emerged from the rock. More important, some of the springheads were adorned with prehistoric art.

"This is very unusual," says Wainwright. "You get springs that have funny things done to them in the Roman and Iron Age periods, but to see it done in the prehistoric period is rare, so we knew we were on to something." In his history of Britain, Geoffrey of Monmouth noted that the medicinal powers of Stonehenge's stones were stimulated by pouring water over them for the sick to bathe in. Indeed, many of the springs and wells in southwest Wales are still believed to have healing powers and are used in this way by local adherents to traditional practices. As Wainwright recalls, "The pieces of the puzzle came together when Tim and I looked at each other and said, 'It's got to be about healing.'"

Once the archaeologists concluded that the ancients had endowed the Carn Menyn rocks with mystical properties, "franchising" them to Stonehenge made sense. "Its intrinsic power would seem to be locked into the material from which it was made and, short of visiting Carn Menyn, which might not have been always feasible, the next best step would have been to create a shrine from the powerful substance, the stone

Darvill (above at left) and Wainwright (above, and pitching in on the sieve, above at left) believe that findings from the dig support their theory that Stonehenge was a prehistoric Lourdes, where the sick came to be healed (left: a student volunteer places excavated sandstones in the proper order for their later return to the trench).

from Carn Menyn itself," says Timothy Insoll, an archaeologist at the University of Manchester. He has documented similar behavior in northern Ghana, where boulders from the Tonna'ab earth shrine—similarly invested with curative properties—have been taken to affiliated shrines at new locations.

Evidence that people made healing pilgrimages to Stonehenge also comes from human remains found in the area, most spectacularly from the richest Neolithic grave ever found in the British Isles. It belonged to the "Amesbury Archer"—a man between 35 and 45 years old who was buried about five miles from Stonehenge between 2400 and 2200 B.C. with nearly 100 possessions, including an impressive collection of flint arrowheads, copper knives and gold earrings.

The bones of the Amesbury Archer tell a story of a sick, injured traveler coming to Stonehenge from as far away as the Swiss or German Alps. The Archer's kneecap was infected and he suffered from an abscessed tooth so nasty that it had destroyed part of his jawbone. He would have been desperate for relief, says Wessex Archaeology's Jacqueline McKinley.

Just 15 feet from where the Amesbury Archer was buried, archaeologists discovered another set of human remains, these of a younger man perhaps 20 to 25 years old. Bone abnormalities shared by both men suggest they could have been related—a father aided by his son, perhaps. Had they come to Stonehenge together in search of its healing powers?

REMARKABLY, ALTHOUGH STONEHENGE is one of the most famous monuments in the world, definitive data about it are scarce. In part, this is because of the reluctance of English Heritage, the site's custodian, to permit excavations. Current chronologies are based largely on excavations done in the 1920s, buttressed by work done in the '50s and '60s. "But none of these excavations were particularly well recorded," says Mike Pitts, editor of *British Archaeology* and one of the few people to have led excavations at Stonehenge in recent decades. "We are still unsure of the detail of the chronology and nature of the various structures that once stood on the site."

To strengthen their case for Stonehenge as a prehistoric Lourdes, Darvill and Wainwright needed to establish that chronology with greater certainty. Had the bluestones been erected by the time the Amesbury Archer made his pilgrimage to the megaliths? Establishing the timing of Stonehenge's construction could also shed light on what made this site so special: with so many henges across Britain, why was this one chosen to receive the benedictions of the bluestones? Such questions could be answered only by an excavation within Stonehenge itself.

Darvill and Wainwright were well placed for such a project. Wainwright had been English Heritage's chief archaeologist for several years. In 2005, Darvill had worked with the

organization on a plan for research at the monument—Stonehenge World Heritage Site: An Archaeological Research Framework—which made the case for small-scale, targeted excavations. Following these guidelines, Darvill and Wainwright requested official permission for the archaeological equivalent of keyhole surgery in order to study part of the first bluestone setting on the site. As Darvill recalls, "Getting this excavation on the road took a lot of preparation and planning, but finally we got there and the formal permissions arrived with a couple of weeks to spare."

And so, under an overcast sky blanketing Salisbury Plain and under the watchful eye of English Heritage personnel and media representatives from around the world, Darvill

"STONEHENGE DECIPHERED," A DOCUMENTARY ABOUT THE DIG, WILL BEGIN AIRING SATURDAY SEPTEMBER 27 ON THE SMITHSONIAN CHANNEL. CHECK LOCAL LISTINGS.

Most of Stonehenge's bluestones were quarried at a site known as Carn Menyn in Wales (above). "It's a magical landscape," says Yvette Staelens, a senior lecturer at England's Bournemouth University. "There are places that are just so powerful that you can see why people would want to transport that landscape somewhere else."

and Wainwright's team began digging this past March. Over the previous weekend, the team had set up a temporary building that would serve as a base for operations and marked out the plot to be excavated. Next to the site's parking lot a newly erected marquee broadcast a live video feed of the action—and offered a selection of souvenir T-shirts, one of which read, "Stonehenge Rocks."

"We were anxious about making the right recommendation—it was the first dig within the stone circle for more than 40 years, and Stonehenge was treated badly by archaeologists in the 20th century," said Amanda Chadburn, who serves as inspector of ancient monuments at English Heritage. "My main feeling, however, was 'This is great!'"

The trench that Darvill and Wainwright marked out for

An analysis of a skeleton of a young man found near Stonehenge and also near the remains of the "Amesbury Archer"—an injured traveler from the Swiss or German Alps—suggests that the pair were related. (Jacqueline McKinley examines a jawbone.) Were they a father and son who came to the megaliths to be healed?

the excavation was surprisingly small: just 8 by 11 feet, and 2 to 6 feet deep in the southeastern sector of the stone circle. But the trench, wedged between a towering sarsen stone and two bluestones, was far from a random choice. In fact, a portion of it overlapped with the excavation carried out by archaeologist Richard Atkinson and colleagues in 1964 that had partially revealed (though not for the first time) one of the original bluestone sockets and gave reason to believe that another socket would be nearby. In addition, Bournemouth University researchers had conducted a ground-penetrating radar survey, providing further assurance that this would be a productive spot.

Wainwright had cautioned me that watching an archaeological dig was like watching paint dry. But while the work is indeed slow and methodical, it is also serene, even meditative. Wainwright, an avuncular figure with a white beard framing a smiling, ruddy face, joined Bournemouth University students operating a large, clattering sieve, picking

Archaeologists Phil Harding (below left) and Mike Allen (below right) had to make some deductions. For example, Allen computed the age of the bluestones by dating organic material found around their sockets. His data suggest they were brought to Stonehenge centuries later than previously believed, between 2400 and 2200 B.C.

out everything of interest: bones, potsherds and fragments of sarsen and bluestone.

Once most of the initial media conflagration had cleared out, the inner circle became quite peaceful. For the first time, I began to get a sense of what made this place so special to people who came here thousands of years ago.

Some days a strong wind blew through the site, creating a small dust bowl. Other days brought rain, sleet and even snow. As material was excavated from the trench and sifted through the coarse sieve, it was ferried to the temporary building erected in the parking lot. Here other students and Debbie Costen, Darvill's research assistant, put the material into a floatation tank, which caused any organic matter—such as carbonized plant remains that could be used for radiocarbon dating—to float to the surface. "They can bring the stuff off-site and give it to us, but it's just stones and soil unless it's documented," said Yvette Staelens, the field supervisor who was responsible for documenting the material and recording just where it came from in the dig.

By the end of the excavation, contours of postholes that once held timber poles and of bedrock-cut sockets for bluestones were visible. In addition, dozens of samples of organic material, including charred cereal grains and bone, had been collected and 14 of these were selected for radiocarbon dating. Although it would not be possible to establish dates from the bluestone sockets themselves, their age could be inferred from the age of the recovered organic materials, which are older the deeper they are buried. Environmental archaeologist Mike Allen compared the positions and depths of the bluestone sockets with this chronology. Using these calculations, Darvill and Wainwright would later be able to estimate that the first bluestones had been placed between 2400 and 2200 B.C.—two or three centuries later than the previous estimate of 2600 B.C.

That means the first bluestones were erected at Stonehenge around the time of the Amesbury Archer's pilgrimage, lending credence to the theory that he came there to be healed.

Among other finds, the soil yielded two Roman coins dating to the late fourth century A.D. Similar coins have been found at Stonehenge before, but these were retrieved from cut pits and a shaft, indicating that Romans were reshaping and altering the monument long after such activities were supposed to have ended. "This is something that people haven't really recognized before," says Darvill. "The power of Stonehenge seems to have long outlasted its original purpose, and these new finds provide a strong link to the world of late antiquity that probably provided the stories picked up by Geoffrey of Monmouth just a few centuries later."

AS SO OFTEN HAPPENS IN ARCHAEOLOGY, the new findings raise nearly as many questions as they answer. Charcoal recovered by Darvill and Wainwright—indicating the burning of pine wood in the vicinity—dates back to the eighth

Charcoal recovered at the excavation dates back to the eighth millennium B.C., indicating the burning of pine wood and suggesting that the area might have been a ritual center for hunter-gatherers thousands of years before Stonehenge was built. Some archaeologists now think the site served different needs over time.

millennium B.C. Could the area have been a ritual center for hunter-gatherer communities some 6,000 years before the earthen henge was even dug? "The origins of Stonehenge probably lie back in the Mesolithic, and we need to reframe our questions for the next excavation to look back into that deeper time," Darvill says.

The new radiocarbon dating also raises questions about a theory advanced by archaeologist Mike Parker Pearson of the University of Sheffield, who has long suggested that Stonehenge was a massive burial site in which the stones were symbols of the dead—the final stop of an elaborate funeral procession by Neolithic mourners from nearby settlements. The oldest human remains found by Parker Pearson's team date to around 3030 B.C., about the time the henge was first built but well before the arrival of the bluestones. That means, says Darvill, "the stones come after the burials and are not directly associated with them."

Roman coin, A.D. 370.

Of course it's entirely possible that Stonehenge was both—a great cemetery and a place of healing, as Darvill and Wainwright willingly admit. "Initially it seems to have been a place for the dead with cremations and memorials," says Darvill, "but after about 2300 B.C. the emphasis changes and it is a focus for the living, a place where specialist healers and the health care professionals of their age looked after the bodies and souls of the sick and infirm." English Heritage's Amanda Chadburn also finds the dual-use theory plausible. "It's such an important place that people want to be associated with it and buried in its vicinity," she says, "but it could also be such a magical place that it was used for healing, too."

Not everyone buys into the healing stone theory. "I think the survey work [Darvill and Wainwright are] doing in the Preseli hills is great, and I'm very much looking forward to the full publication of what they've found there," says Mike Pitts. "However, the idea that there is a prehistoric connection between the healing properties of bluestones and Stonehenge as a place of healing does nothing for me at all. As far as I'm concerned, it's a fairy story." Pitts also wants to see more evidence that people suffering from injuries and illness visited Stonehenge. "There are actually very few—you can count them on one hand—human remains around and contemporary with Stonehenge that haven't been cremated so that you could see what injuries or illnesses they might have suffered from," he says. "For long periods in the Neolithic we have a dearth of human remains of any kind."

For his part, Wainwright believes that no theory will ever be fully accepted, no matter how convincing the evidence. "I think what most people like about Stonehenge is that nobody really knows why it was built, and I think that's probably always going to be the case," he says. "It's a bloody great mystery."

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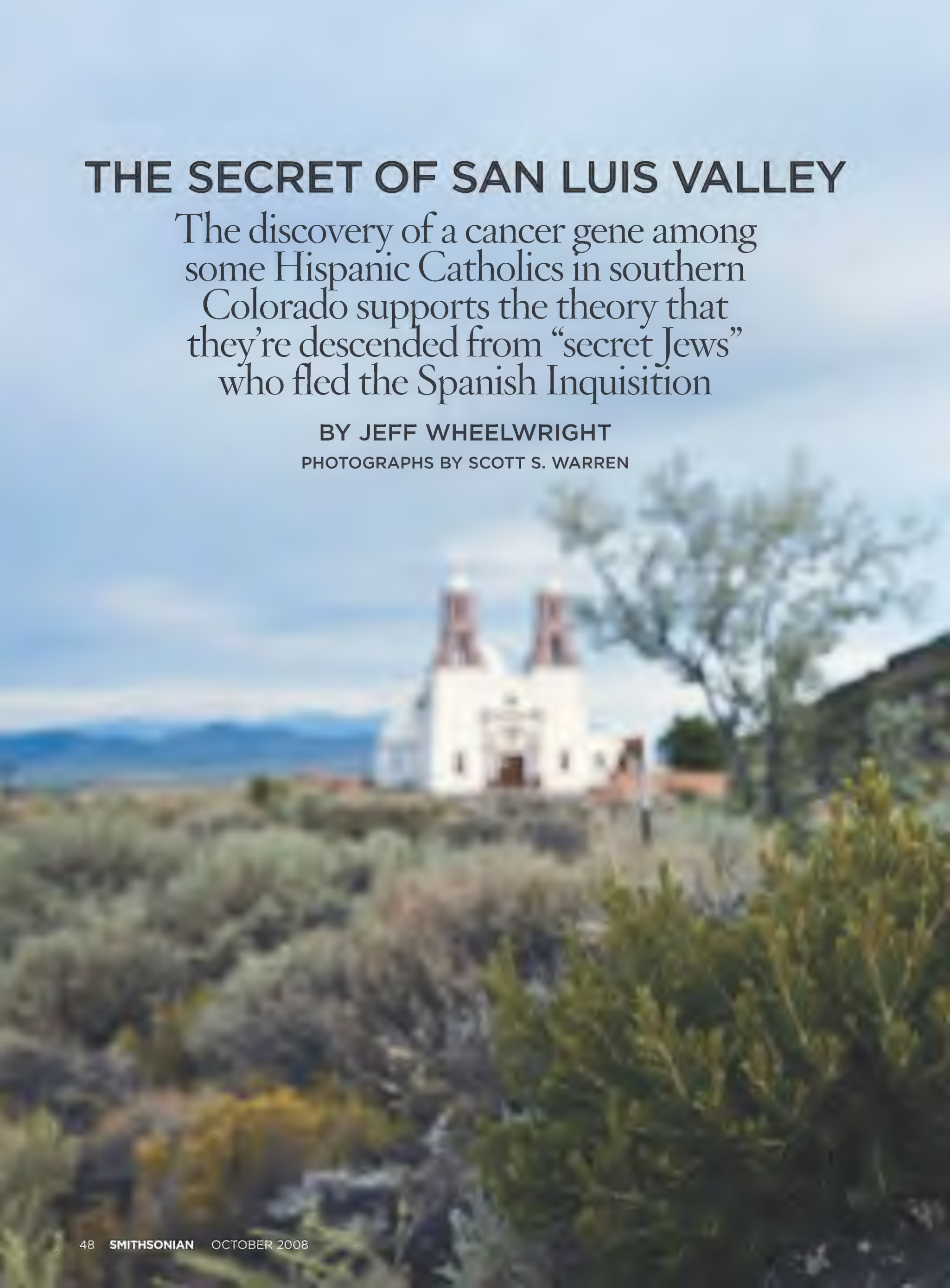
THE SECRET OF SAN LUIS VALLEY

The discovery of a cancer gene among some Hispanic Catholics in southern Colorado supports the theory that they're descended from "secret Jews" who fled the Spanish Inquisition

BY JEFF WHEELWRIGHT

PHOTOGRAPHS BY SCOTT S. WARREN



For some people in the region (Chapel of All Saints, San Luis, Colorado), the DNA results have been a revelation.

ONE SEPTEMBER DAY IN 2001, TERESA CASTELLANO, Lisa Mullineaux, Jeffrey Shaw and Lisen Axell were having lunch in Denver. Genetic counselors from nearby hospitals and specialists in inherited cancers, the four would get together periodically to talk shop. That day they surprised one another: they'd each documented a case or two of Hispanic women with aggressive breast cancer linked to a particular genetic mutation. The women had roots in southern Colorado, near the New Mexico border. "I said, 'I have a patient with the mutation, and she's only in her 40s,'" Castellano recalls. "Then Lisa said that she had seen a couple of cases like that. And Jeff and Lisen had one or two also. We realized that this could be something really interesting."

Curiously, the genetic mutation that caused the virulent breast cancer had previously been found primarily in Jewish people whose ancestral home was Central or Eastern Europe. Yet all of these new patients were Hispanic Catholics.

Genetic counselors (Teresa Castellano in San Luis) helped identify people who carried the gene mutation—and urged that family members be tested for it.

Mullineaux contacted Ruth Oratz, a New York City-based oncologist then working in Denver. "Those people are Jewish," Oratz told her. "I'm sure of it."

Pooling their information, the counselors published a report in a medical journal about finding the gene mutation in six "non-Jewish Americans of Spanish ancestry." The researchers were cautious about some of the implications because the breast cancer patients themselves, as the paper put it, "denied Jewish ancestry."

The finding raised some awkward questions. What did the presence of the genetic mutation say about the Catholics who carried it? How did they happen to inherit it? Would they have to rethink who they were—their very

identity—because of a tiny change in the three billion "letters" of their DNA? More important, how would it affect their health, and their children's health, in the future?

Some people in the valley were reluctant to confront such questions, at least initially, and a handful even rejected the overtures of physicians, scientists and historians who were suddenly interested in their family histories. But rumors of secret Spanish Jewry had floated around northern New Mexico and the San Luis Valley for years, and now the cold hard facts of DNA appeared to support them. As a result, families in this remote high-desert community have had to come to grips with a kind of knowledge that more and more of us are likely to face. For the story of this wayward gene is the story of modern genetics, a science that increasingly has the power both to predict the future and to illuminate the past in unsettling ways.

Expanding the DNA analysis, Sharon Graw, a University of Denver geneticist, confirmed that the mutation in the Hispanic patients from San Luis Valley exactly matched one previously found in Ashkenazi Jews from Central and Eastern Europe. The mutation, 185delAG, is a variant of a gene called BRCA1. When normal and healthy, BRCA1 helps to protect breast and ovarian cells from cancer. An extremely long gene, it has thousands of DNA letters, each corresponding to one of four chemical compounds that make up the genetic code and run down either strand of the DNA double helix; a "misspelling"—a mutation—can occur at virtually any letter. Some are of no consequence, but the deletion of the chemicals adenine (A) and guanine (G) at a site 185 rungs into the DNA ladder—hence the name 185delAG—will prevent the gene from functioning. Then the cell becomes vulnerable to a malignancy. To be sure, most breast and ovarian cancers do not run in families. The cases owing to BRCA1 and a similar gene, BRCA2, make up less than 10 percent of cases overall.

By comparing DNA samples from Jews around the world, scientists have pieced together the origins of the 185delAG mutation. It is ancient. More than 2,000 years ago, among the Hebrew tribes of Palestine, someone's DNA dropped the AG letters at the 185 site. The glitch spread and multiplied in succeeding generations, even as Jews migrated from Palestine to Europe. Ethnic groups tend to have their own distinctive genetic disorders, such as harmful variations of the BRCA1 gene, but because Jews throughout history have often married within their religion, the 185delAG mutation gained a strong foothold in that population. Today, roughly one in 100 Jews carries the harmful form of the gene variant.

Meanwhile, some of the Colorado patients began to look into their own heritage. With the zeal of an investigative reporter, Beatrice Wright searched for both cancer and Jewish ancestry in her family tree. Her maiden name is Martinez. She lives in a town north of Denver and has dozens of Martinez relatives in the San Luis Valley and northern New Mexico. In fact, her mother's maiden name was Martinez also. Wright had been diagnosed with breast cancer in 2000, when she was 45. Her right breast was removed and she was treated with chemotherapy. Later, her left breast, uterus, fallopian tubes and ovaries were removed as a precaution. She had vaguely known that the women on her father's side were susceptible to the disease. "With so much cancer on Dad's side of the family," she said, "my cancer doctor thought it might be hereditary." Advised by Lisa Mullineaux about BRCA testing, she provided a blood sample that came back positive for 185delAG.

In 1492, Spain began to expel Jews who would not convert to Catholicism (right: a 14th-century illumination). Did descendants of exiles and converts later settle in New Mexico Territory, founded in 1598 by Juan de Oñate (left)? Maybe, the DNA evidence says.

When Wright was told that the mutation was characteristic of Jewish people, she recalled a magazine article about the secret Jews of New Mexico. It was well known that during the late Middle Ages the Jews of Spain were forced to convert to Catholicism. According to a considerable body of scholarship, some of the *conversos* maintained their faith in secret. After Judaism was outlawed in Spain in 1492 and Jews were expelled, some of those who stayed took their beliefs further underground. The exiles went as far as the New World.

For the first time Wright connected this history to memories of conceivably Jewish customs, such as sweeping dust into the center of a room and covering mirrors while mourning a loved one's death. She read up on the Spanish "crypto-Jews" in the library and on the Internet. In 2001, she and her husband made an extended visit to the valley and northern New Mexico. Tracking down as many of her paternal relatives

BETTMANN / CORBIS; GRANGER COLLECTION, NEW YORK

as she could find, she alerted them to their dangerous genetic legacy and their ethno-religious heritage. "I have 60 first cousins, some I never knew I had," she says. "So I went fact-finding. I made the trek because I needed to know where I was from. 'Did you know about our Jewish heritage?' I said. It wasn't a big deal to some of them, but others kind of raised an eyebrow like I didn't know what I was talking about."

PART OF NEW MEXICO TERRITORY until the U.S. government delineated the Colorado Territory in 1861, the San Luis Valley lies between two chains of mountains, the San Juans to the west and the Sangre de Cristos to the east. The Rio Grande begins here. The town of San Luis—the oldest in Colorado—is the Spanish heart of the valley. With an old church on the central plaza and a modern shrine on a mesa overlooking the town, San Luis bristles with Catholic symbols. It seems a short step back in time to the founding of the New Mexico colony, when picaresque gold-hungry conquistadors, Franciscan friars and Pueblo Indians came together, often violently, in a spare and sunburnt land. As Willa Cather put it in *Death Comes for the Archbishop*, perhaps the best novel about the region, the sunsets reflected on the Sangre de Cristo Mountains are "not the colour of living blood" but "the colour of the dried blood of saints and martyrs."

The discovery of the 185delAG mutation in the valley and subsequently in New Mexico hints at a different story, with its own trail of blood and persecution. The significance of the genetic work was immediately recognized by Stanley M. Hordes, a professor at the University of New Mexico. During the early 1980s, Hordes had been New Mexico's official state historian, and part of his job was assisting people with their genealogies. Hordes, who is 59, recalls that he received "some very unusual visits in my office. People would drop by and tell me, in whispers, that so-and-so doesn't eat pork, or that so-and-so circumcises his children." Informants took him to backcountry cemeteries and showed him gravestones that he says bore six-pointed stars; they brought out devotional objects from their closets that looked vaguely Jewish. As Hordes began speaking and writing about his findings, other New Mexicans came forward with memories of rituals and practices followed by their ostensibly Christian parents or grandparents having to do with the lighting of candles on Friday evenings or the slaughtering of animals.

JEFF WHEELWRIGHT, *who lives in Morro Bay, California, is working on a book about the 185delAG breast cancer mutation. Photographer* **SCOTT S. WARREN** *is based in Durango, Colorado.*

Hordes laid out his research in a 2005 book, *To the End of the Earth: A History of the Crypto-Jews of New Mexico*. Following the Jews' expulsion from Spain, crypto-Jews were among the early settlers of Mexico. The Spanish in Mexico periodically tried to root out the "Judaizers," but it is clear from the records of trials that Jewish practices endured, even in the face of executions. According to Hordes' research, settlers who were crypto-Jews or descended from Jews ventured up the Rio Grande to frontier outposts in New Mexico. For 300 years, as the territory passed from Spanish to Mexican to United States hands, there was almost nothing in the historical record about crypto-Jews. Then, because of probing by younger relatives, the stories trickled out. "It was only when their suspicions were aroused decades later," Hordes writes, "that they asked their elders, who reluctantly answered, '*Erasmos judíos*' ('We were Jews')."

But were they? Judith Neulander, an ethnographer and co-director of the Judaic Studies Program at Case Western Reserve University in Cleveland, was at first a believer of Hordes' theory that crypto-Judaism had survived in New Mexico. But after interviewing people in the region herself, she concluded it was an "imagined community." Among other things, Neulander has accused Hordes of asking leading questions and planting suggestions of Jewish identity. She says there are better explanations for the "memories" of unusual rites—vestiges of Seventh-Day Adventism, for example, which missionaries brought to the region in the early 20th century. She also suggested that perhaps some dark-skinned Hispanics were trying to elevate their ethnic status by associating themselves with lighter-skinned Jews, writing that "claims of Judaeo-Spanish ancestry are used to assert an overvalued line of white ancestral descent in the American Southwest."

> Their DNA, retrieved from stored blood samples, tested positive for 185delAG. "Something's going on with our family," Therese said. "We need to wake up."

Hordes disagrees. "Just because there are some people who are wannabes doesn't mean everybody is a wannabe," he says. But he acknowledges that Neulander's criticisms have made him and other researchers more cautious.

Hordes, pursuing another line of evidence, also pointed out that some of the New Mexicans he was studying were afflicted by a rare skin condition, pemphigus vulgaris, that is more common among Jews than other ethnic groups. Neulander countered that the same type of pemphigus vulgaris occurs in other peoples of European and Mediterranean background.

Then the 185delAG mutation surfaced. It was just the sort of objective data Hordes had been looking for. The findings didn't prove the carriers' Jewish ancestry, but the evidence smoothly fit his historical theme. Or, as he put it with a cer-

Therese Martinez (center: with sisters Agnes Martinez, left, and Annamarie Valdez) holds pictures of sister Josephine Valdez Boisseaux, who died of cancer linked to the gene mutation.

tain clinical detachment, it's a "significant development in the identification of a Jewish origin for certain Hispano families."

"WHY DO I DO IT?" Hordes was addressing the 2007 meeting, in Albuquerque, of the Society for Crypto-Judaic Studies, a scholarly group he co-founded. "Because the fabric of Jewish heritage is richer in New Mexico than we thought." His research and that of others, he said at the gathering, "rip the veneer off" the accounts of Spanish-Indian settlement and culture by adding a new element to the conventional mix.

One conference attendee was a Catholic New Mexican who heartily embraces his crypto-Jewish heritage, the Rev. Bill Sanchez, a local priest. He says he has upset some local Catholics by saying openly that he is "genetically Jewish." Sanchez bases his claim on another genetic test, Y chromosome analysis. The Y chromosome, handed down from father to son, provides a narrow glimpse of a male's paternal lineage. The test, which is promoted on the Internet and requires only a cheek swab, is one of the more popular genealogy probes. Sanchez noted that the test suggested he was descended from the esteemed Cohanim lineage of Jews. Still, a "Semitic" finding on this test isn't definitive; it could also apply to non-Jews.

Geneticists warn that biology is not destiny. A person's family tree contains thousands of ancestors, and DNA evidence that one may have been Hebrew (or Armenian or Bolivian or Nigerian) means very little unless the person decides to embrace the implication, as Sanchez has done. He sees no conflict between his disparate religious traditions. "Some of us believe we can practice rituals of crypto-Judaism and still be good Catholics," he says. He keeps a menorah in a prominent place in his parish church and says he adheres to a Pueblo belief or two for good measure.

At the Albuquerque meeting, the new evidence about 185delAG prompted discussion not only among academics but also among some of the subjects. Robert Martinez, no imme-

Among the Catholics to embrace their complex ethnic roots is the Rev. Bill Sanchez (in his Albuquerque church with a shofar, a horn blown in synagogues on some Jewish holy days).

diate relation to Beatrice Wright, teaches history at a high school near Albuquerque. During his summer vacations he helps Hordes sift through municipal and church records in Latin America and Europe, studying family histories and looking for references to Judaism. He traces his roots to members of the first expedition to New Mexico, led by Juan de Oñate, in 1598. The Spanish explorer himself had converso relatives, Hordes has found, and included conversos in the expedition.

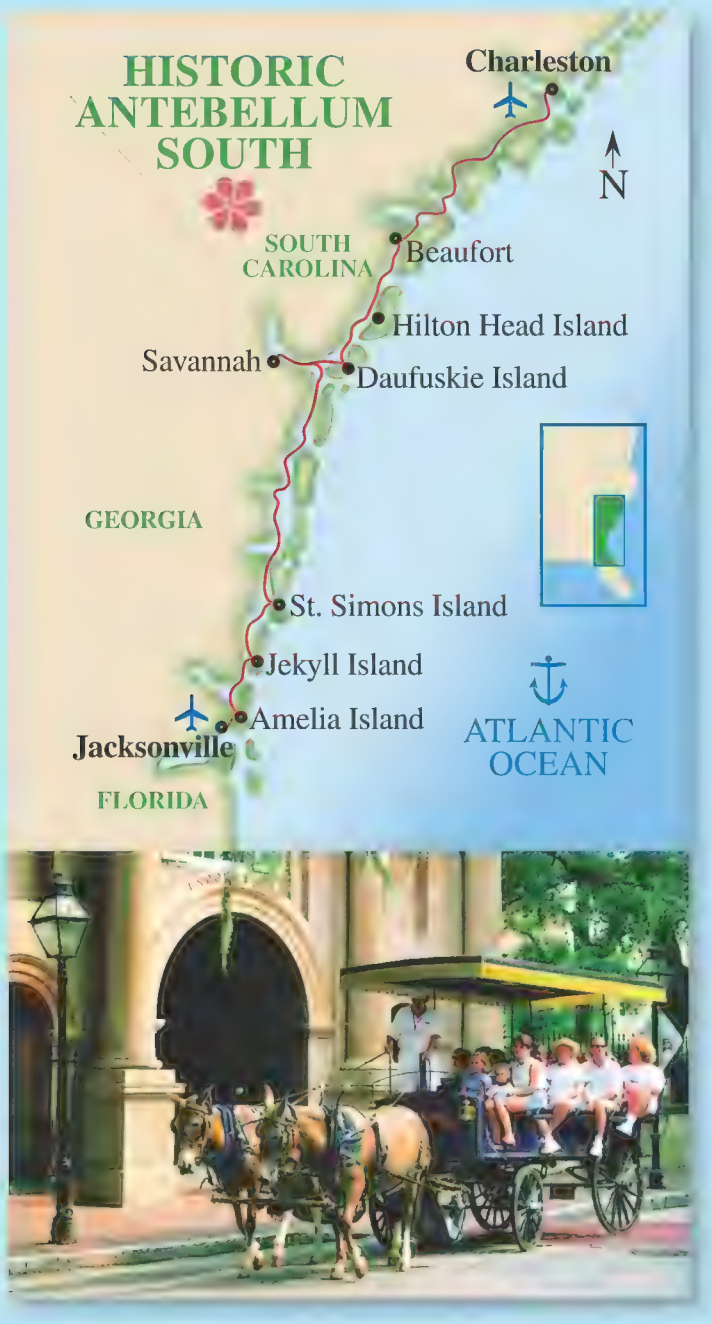
When he went to work as Hordes' assistant ten years ago, Martinez, who is 45, was well aware of the disease in his family: several relatives have had breast or ovarian cancer. "Of course, I'd always heard about the cancer in our family on our mom's side," he says. "And then two of my sisters were diagnosed within months of each other." Both women tested positive for 185delAG and have since died. "I carry the mutation too," he says.

The Jewish connection caused no stir in his family, he says. "Me, I'm open. I want to know, Who am I? Where am I? We're a strange lot, New Mexicans. We refer to ourselves as Spanish, but we have Portuguese blood, Native American, some black too. We descend from a small genetic pool, and we're all connected if you go back far enough."

TERESA CASTELLANO, the genetic counselor, has spent time in the San Luis Valley explaining BRCA to community leaders, patients and others. BRCA carriers, she tells them, have up to an 80 percent risk of developing breast cancer, as well as a significant risk of ovarian cancer. If a woman tests positive, her children would have a 50-50 chance of acquiring the flawed gene. BRCA mutations are passed down by men and women alike. If a family has mainly sons, the threat to the next generation may be masked.

A year and a half ago, Castellano got a call from a laboratory technician advising her of another patient with a connection to the 185delAG mutation. The patient's family had roots in the San Luis Valley and northern New Mexico. Their name was Valdez. At the top of the pedigree were eight sib-

SMOOTH WATERS
SOUTHERN CHARM



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lings, two of whom, sisters, were still living. In the next generation were 29 adult children, including 15 females. Five of the 15 women had developed breast or ovarian cancer. Then came an expanding number of grandchildren and great-grandchildren, who were as yet too young for the disease but who might have the mutation. Only one or two members of the disparate clan still lived in the valley.

Ironically, Castellano's initial patient, Therese Valdez Martinez, did not carry the mutation herself. Her breast cancer was a "sporadic" case, not associated with a known mutation. But Therese's sister Josephine and her first cousin Victoria had died of ovarian cancer. Their DNA, retrieved from stored blood samples, tested positive for 185delAG. "Something's going on with our family," Therese said. "We need to wake up."

Castellano offered to hold counseling sessions with members of the Valdez extended family in April 2007. With Therese's backing, she sent out 50 invitations. A total of 67 people, including children, attended the session in a hospital conference room in Denver. Therese said, "One cousin—he won't come. He doesn't want to know. To each his own."

The tables were arranged in a U-shape, rather like the mountains around the valley. Castellano stood at the open end. She pointed out that in addition to breast and ovarian cancer the Valdez family had several cases of colon cancer. "There's some risk, it appears," Castellano said, "and therefore everyone in the family should have a colonoscopy at age 45." That caused grumbling among her listeners.

"This family has a lot of ovarian cancer," she went on, "but appears not to have a breast cancer case under age 35. So we think the age for women for starting their annual mammograms should be 30 to 35. We recommend that our '185' families do it by MRI every year. And if you do have 185," she added bluntly, "get your ovaries out at age 35."

A silence, then a question from a young woman in her 20s: "Can't a healthy lifestyle help? Do you have to have your ovaries out at 35?"

"Taking them out will decrease your risk but not eliminate it," Castellano said. Looking for support for this harsh measure, she smiled down the table at Angelita Valdez Armenta. Angelita had undergone the operation, called an oophorectomy. "Angie is a great example of how someone here is going to get old!" Months after the meeting, Angelita had her DNA tested and learned she was indeed a carrier of 185delAG.

The point of the meeting, which Castellano came to quickly enough, was to encourage family members to sign up for the DNA test. "Do you have to be tested?" she said. "No. But then you have to pretend you're positive and be more proactive about your health and your screening." Noting that the men were also at some risk of breast cancer, Castellano urged them to check themselves by inverting the nipple and feeling for a pea-sized lump.

Shalee Valdez, a teenager videotaping the session, put down her camera. "If you have the mutation," she wanted to know, "can you donate blood?" Yes. "Can it get into other people?" No, you had to inherit it. Shalee looked pleased. Castellano looked satisfied. As of this writing 15 additional Valdezes have undergone testing for the 185delAG mutation, with six of them testing positive.

Even Stanley Hordes, whose two decades of historical research has been bolstered by the 185delAG findings, says that the greatest value of the genetic information in New Mexico and Colorado is that it "identified a population at risk for contracting potentially fatal diseases, thus providing the opportunity for early detection and treatment." In other words, genes are rich in information, but the information that matters most is about life and death.

As she prepared for the Valdez family meeting, Castellano recalled, she wondered how the group would respond to what she had to tell them about their medical history. Then she plunged into her account of how 185delAG originated in the Middle East and traveled to New Mexico. The revelation that the Valdezes were related to Spanish Jews prompted quizzical looks. But, later, Elsie Valdez Vigil, at 68 the oldest family member there, said she wasn't bothered by the information. "Jesus was Jewish," she said.

The gene testing, he says, "identified a population at risk for contracting potentially fatal diseases, thus providing the opportunity for early detection and treatment."

Historian Stanley Hordes (at the University of New Mexico) says his research and the genetic findings "rip the veneer off" the conventional wisdom about the Spanish settling of New Mexico. But one critic counters that the secret Jewish community championed by Hordes is nothing but a myth.

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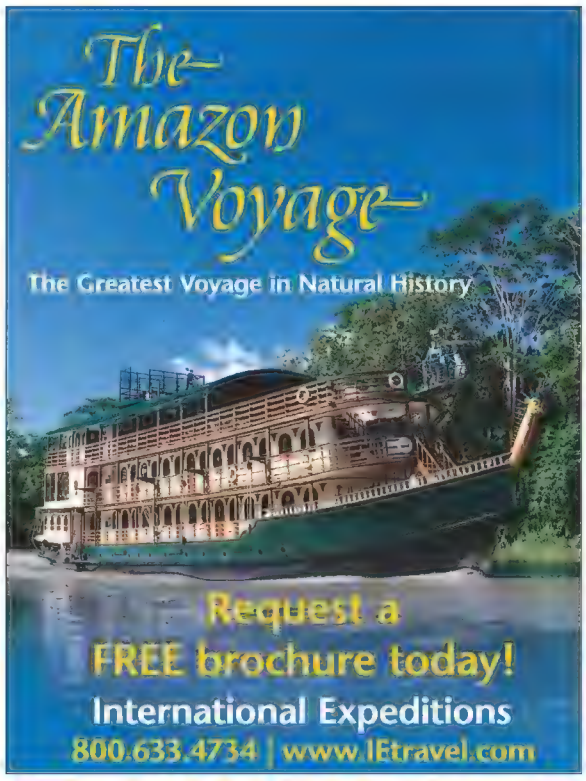

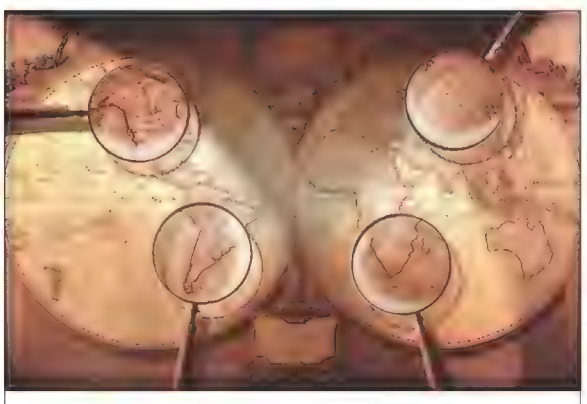

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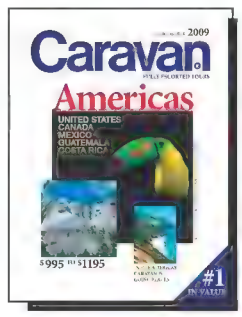

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Iran's anger over decades of foreign meddling in its internal affairs reached its apex in the 1979 revolution.

INSIDE

NO AMERICAN who was alive and alert in the early 1980s will ever forget the Iran hostage crisis. Militants stormed the U.S. embassy in Tehran, captured American diplomats and staff and held 52 of them captive for 444 days. In the United States, the television news program "Nightline" emerged to give nightly updates on the crisis, with anchorman Ted Koppel beginning each report by announcing that it was now "Day 53" or "Day 318" of the crisis. For Americans, still recovering from defeat in Vietnam, the hostage crisis was a searing ordeal. It stunned the nation and undermined Jimmy Carter's presidency. Many Americans see it as the pivotal episode in the history of U.S.-Iranian relations.

Iranians, however, have a very different view.

Bruce Laingen, a career diplomat who was chief of the U.S. embassy staff, was the highest-ranking hostage. One day, after Laingen had spent more than a year as a hostage, one of his captors visited him in his solitary cell. Laingen exploded in rage, shouting at his jailer that this hostage-taking was immoral, illegal and "totally wrong." The jailer waited for him to finish, then replied without sympathy.

"You have nothing to complain about," he told Laingen. "The United States took *our whole country* hostage in 1953."

Few Americans remembered that Iran had descended into dictatorship after the United States overthrew the most democratic government it had ever known. "Mr. President, do you think it was proper for the United States to restore the shah to the throne in 1953 against the popular will within Iran?" a reporter asked President Carter at a news conference during the hostage crisis. "That's ancient history," Carter replied.

Not for Iranians. "In the popular mind, the hostage crisis was seen as justified by what had happened in 1953," says Vali Nasr, an Iranian-born professor at Tufts University's Fletcher School of Law and Diplomacy in Massachusetts. "People

SCHOLARS TRACE THE NATION'S ANTAGONISM TO ITS HISTORY OF DOMINATION BY FOREIGN POWERS

IRAN'S FURY

BY STEPHEN KINZER

saw it as an act of national assertiveness, of Iran standing up and taking charge of its own destiny. The humiliation of 1953 was exorcised by the taking of American hostages in 1979."

This chasm of perception reflects the enormous gap in the way Americans and Iranians viewed—and continue to view—one another. It will be hard for them to reconcile their differences unless they begin seeing the world through each other's eyes.

IRAN'S ASSERTIVENESS on the global stage—especially its defiant pursuit of what it sees as its sovereign right to a nuclear program—is in part the product of traumatic events that have shaped its national consciousness over the course of generations. In fact, all of 20th-century Iranian history can be seen as leading to this confrontation. That history has been dominated by a single burning passion: to destroy the power that foreigners have long held over Iran.

Many countries in the Middle East are modern inventions, carved out of the Ottoman Empire by victorious European powers following the end of World War I. That is not the case with Iran, one of the world's oldest and proudest nations. Half a millennium before the birth of Christ, the great conquerors Cyrus, Darius and Xerxes built the Persian Empire into a far-reaching power. When Europe was descending into the Dark Age, Persian poets were creating works of timeless beauty, and Persian scientists were studying mathematics, medicine and astronomy. Over the centuries, the nation that would become Iran thrived as it assimilated influences from Egypt, Greece and India.

Persian armies were not always victorious. They failed to turn back invading Arabs who conquered Persia in the seventh century, decisively reshaping it by introducing Islam. But the Persians turned even this defeat into a kind of victory by adopting their own form of Islam, Shiism, which allowed them to maintain the distinct identity they have always cherished. Shiite Muslims broke ranks with the majority Sunnis as a result of a succession dispute following the death of the Prophet Muhammad in A.D. 632.

While Sunnis believe that Muhammad's friend and adviser, Abu Bakr, was the legitimate successor, Shiites believe that 'Ali ibn Abi Talib, the Prophet's first cousin and son-in-law, was the rightful heir, and that the Prophet's legitimate lineage ended with the "occultation" of Muhammad al-Mahdi around A.D. 874. This Twelfth Imam is believed to have been hidden by God and is destined to return before the Last Judgment. Shiite religious scholars argued that they should take on some of the Imam's responsibilities in the meantime. (Ayatollah Ruhollah Khomeini further expanded this concept to justify the clerical rule he imposed on Iran after 1979.) Shiite rulers brought Persia to another peak of power in the 16th and 17th centuries, creating a magnificent capital at Isfahan, where spectacular buildings like the Imam Mosque still testify to the empire's grandeur.

FORMER GLORY

Ancient conquerors (top: Darius) built Persia into an empire. But a succession of foreign powers would exploit Iran.

From this rich heritage, Iranians have developed a deep-rooted sense of national identity. The pride they take in their achievements, however, is mixed with resentment. Beginning in the 18th century, Persia descended from glorious heights to appalling depths. Weak and corrupt leaders allowed foreign powers to subjugate the nation. Afghan tribesmen overran and looted Isfahan in 1722. During the early 19th century, Russia seized large Persian territories in the Caspian provinces of Georgia, Armenia, Dagestan and Azerbaijan. In 1872, a British company bought a "concession" from the decadent Qajar dynasty that gave it the exclusive right to run Persia's industries, irrigate its farmland, exploit its mineral resources, develop its railway and streetcar lines, establish its national bank and print its currency. The British statesman Lord Curzon would call this "the most complete and extraordinary surrender of the entire industrial resources of a kingdom into foreign hands that has ever been dreamed of, much less accomplished, in history."

Public outrage in Iran led to the withdrawal of the British concession in 1873, but the incident reflected Iran's new status as a vassal state and a pawn in great-power rivalries. For nearly 150 years, Russia and Britain dominated Iran's economy and manipulated its leaders. This history still stings. "Nationalism, the desire for independence, is a fundamental theme," says Shaul Bakhash, who teaches Iranian history at George Mason University in Virginia. "The memory of foreign intervention in Iran runs very deep. It is playing itself out again in today's stand-off with the United States over the nuclear program. Iranians think, 'Once again the West wants to deny us technology and modernism and independence.'

Former New York Times *correspondent* **STEPHEN KINZER** *wrote* All the Shah's Men *and, most recently,* A Thousand Hills, *which documents the rebuilding of Rwanda after the 1994 genocide.*

MIMMO JODICE / CORBIS; MAP: GUILBERT GATES; PP. 60-61 ABBAS / MAGNUM PHOTOS

In 1919, Iran (Shah Ahmad at center) granted Britain (Lord Curzon at far right) control over Iran's army and treasury.

HULTON-DEUTSCH COLLECTION / CORBIS

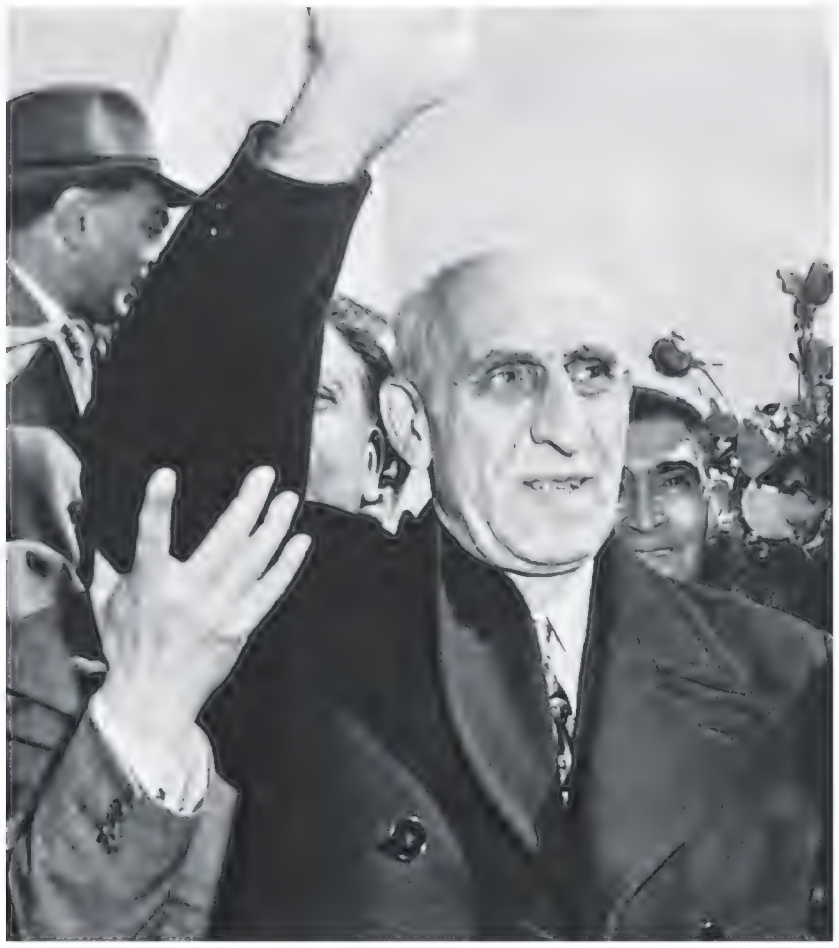
THE ANGLO-PERSIAN AGREEMENT, WHICH ALL BUT ENDED IRAN'S STATUS AS AN INDEPENDENT STATE, LED TO AN UPRISING THAT ENDED THE QAJAR DYNASTY.

It's a very powerful history. Iran is extraordinarily sensitive to any indication of foreign influence or foreign direction."

A SERIES OF UPRISINGS shaped modern Iranian nationalism. The first erupted in 1891, after the British Imperial Tobacco Company took control of Iran's tobacco industry, which reached deep into the national life of a country where many people survived by growing tobacco and many more smoked it. The morally and financially bankrupt Qajar leader, Nasir al-Din Shah, sold the industry to British Imperial for the laughably small sum of £15,000. Under the terms of the deal, Iranian tobacco farmers had to sell their crops at prices set by British Imperial, and every smoker had to buy tobacco from a shop that was part of its retail network. This proved one outrage too many. A national boycott of tobacco, supported by everyone from intellectuals and clerics to Nasir al-Din's own harem women, swept the country. Troops fired upon protesters at a huge demonstration in Tehran. After a series of even larger demonstrations broke out, the concession was canceled. "For a long time Iranians had been watching other people take control of their destiny," says John Woods, a professor of Middle Eastern studies at the University of Chicago. "The tobacco revolt was the moment when they stood up and said they'd had enough."

That revolt crystallized the sense of outrage that had been building in Iran for more than a century. It also laid the groundwork for the Constitutional Revolution of 1906, in which reformers chipped away at the power of the dying Qajar dynasty by establishing a parliament and a national electoral system. Over the century that followed, many Iranian elections were rigged and many constitutional provisions were violated. Nonetheless, democracy is not a new idea for Iranians. They have been struggling toward it for more than 100 years. That makes Iran fertile ground for democratic transition in ways that most nearby countries are not.

"The ingredients are all there," says Barbara Slavin, recently a senior fellow at the United States Institute of Peace and author of *Bitter Friends, Bosom Enemies: Iran, the U.S., and the Twisted Path to Confrontation*. "Iran has an established history of elections that has put people in the habit of going



AMERICAN COUP

Reza Shah (above) was deposed, but Mohammad Reza, his son (above as child and right), was restored to the throne after Eisenhower and Dulles (below) approved a CIA-led coup against Prime Minister Mohammed Mossadegh (above left) in 1953.

to the polls. Iranians are used to hearing different opinions expressed in parliament and in the press. They turn out to vote in great numbers, and hold elected officials accountable for their actions."

Although the Constitutional Revolution of 1906 weakened the Qajar dynasty, it did not end it. That was fine with the Russians and British, who continued treating Iran like a colony. In 1907, the two nations signed a treaty dividing Iran between them. The British assumed control over southern provinces, guaranteeing them a land route to India, and Russia took over the north, ensuring it control over the region adjoining its southern border. No Iranian representative attended the conference in St. Petersburg at which this extraordinary treaty was signed.

Moscow's interest in Iran waned as Russia was consumed by civil war and then, in 1917, fell under Bolshevik rule. Britain moved to fill the vacuum. In 1919 it assumed control over Iran's army, treasury, transportation system and communications network through imposition of the Anglo-Persian Agreement, ensuring its approval through the simple expedient of bribing the Iranian negotiators. In a memorandum to his British cabinet colleagues, Lord Curzon defended the agreement, arguing that Britain could not permit the frontiers of its Indian Empire to descend into "a hotbed of misrule, enemy intrigue, financial chaos and political disorder." He garnished Britain's traditional rivalry with Russia with fears of Communist conspiracies: "If Persia were to be alone, there is every reason to fear that she would be overrun by Bolshevik influence from the north."

The Anglo-Persian Agreement, which all but ended Iran's status as an independent state, sparked a second uprising in 1921. The Qajar dynasty was removed from power and replaced by a fiercely reformist dictator—an illiterate former stableboy who came to call himself Reza Shah (*shah* being the Persian word for "king"). In appearance Reza was an intimidating figure, "six foot three in height, with a sullen manner, huge nose, grizzled hair and a brutal jowl," the British chronicler Vita Sackville-West wrote after attending his coronation in 1926. "He looked, in fact, like what he was, a Cossack trooper; but there was no denying he was a kingly presence."

That aptly captured Reza Shah's dual nature. He resorted to brutal tactics to crush bandits, tribal leaders and everyone else he saw as blocking his drive to re-establish Iran as a great power, but he also deserves credit for creating the modern Iranian state. He built the country's first railway, established a national bank and stripped clerics of much of their power. Shockingly, he banned the veil for women. The decree was so radical that many women refused to leave their homes.

Although many Iranians were appalled by Reza Shah, they

AKG-IMAGES; ULLSTEIN BILD; CARL IWASAKI / TIME LIFE PICTURES / GETTY IMAGES

MOHAMMAD REZA SHAH RULED WITH INCREASING REPRESSION, USING HIS BRUTAL SECRET POLICE, SAVAK, TO TORTURE OPPOSITION FIGURES.

admired and supported him because they believed a strong central government was needed to fight back against foreign domination. It was during this period that the modern idea of what it meant to be Iranian began to take shape. "Before the beginning of the 20th century, if you asked a villager where he was from, he would say he was from such-and-such village," says Janet Afary, a professor of history at Purdue University who has written extensively about the Constitutional Revolution. "If you pressed him about his identity, he would say he was a Muslim. National identification, in the sense of everyone in the country calling themselves Iranian, started with the intellectuals of the Constitutional Revolution and was institutionalized under Reza Shah."

The Iranian government developed close economic and political ties with Germany, the European rival to Iran's traditional enemies, Britain and Russia. That relationship prompted the Allies to invade Iran in 1941. They crushed Iran's pitiful army in a campaign that lasted less than a month. This showed Iranians that despite all Reza Shah had accomplished, Iran was still too weak to resist foreign powers. It was yet another national humiliation, and led to Reza Shah's forced abdication in September 1941. His 21-year-old son, Mohammad Reza, took his place.

The winds of nationalism and anti-colonialism that swept across Asia, Africa and Latin America in the years after World War II whipped up a sandstorm in Iran. Since the early 20th

PP. 64-65 JAMES L. STANFIELD / NATIONAL GEOGRAPHIC IMAGE COLLECTION

THE ONLY PLACE WHERE DISSIDENTS COULD FIND SHELTER WAS IN MOSQUES, WHICH GAVE IRAN A PUSH TOWARD FUNDAMENTALIST RULE.

century, the immeasurably rich Iranian oil industry had been under the control of a British monopoly, the Anglo-Iranian Oil Company, which was owned principally by the British government. Iranian oil powered the British economy and made possible the high standard of living Britons enjoyed from the 1920s through the 1940s. It also fueled the Royal Navy as it projected British power around the world. Most Iranians, meanwhile, lived in wretched poverty.

Anger over this glaring inequality triggered the next Iranian revolution, a peaceful but deeply transformative one. In 1951, Iran's parliament chose as prime minister one of the most highly educated men in the country, Mohammed Mossadegh, whose degree from the University of Neuchâtel in Switzerland made him the first Iranian ever to earn a doctorate in law from a European university. Mossadegh championed what had become the nation's transcendent goal: nationalization of the oil industry. Even before taking office, he proposed a nationalization law that both houses of parliament passed unanimously. The British, to no one's surprise, refused to accept it. They withdrew their oil technicians, blockaded the port from which oil was exported and asked the United Nations to order Iran to withdraw the plan. Mossadegh's popularity at home skyrocketed; as a British diplomat wrote in a report from Tehran, he had done "something which is always dear to Persian hearts: he flouted the authority of a great power and a great foreign interest."

Mossadegh's daring challenge to Britain also turned him into a world figure. *Time* magazine chose him as its 1951

PP. 66-67 AP IMAGES

DAYS OF RAGE

The U.S.-Iranian alliance (below: the Shah with President Jimmy Carter) ended in the 1979 revolution, which led to the rule of Ayatollah Khomeini (left) and lay behind the 444-day hostage crisis (above).

BETTMANN / CORBIS; OWEN FRANKEN / CORBIS

Man of the Year. In October he traveled to New York City to plead his case at the United Nations. It was the first time the leader of a poor country had mounted this august stage to challenge a great power so directly.

"My countrymen lack the bare necessities of existence," Mossadegh told the U.N. Security Council. "Their standard of living is probably one of the lowest in the world. Our greatest national resource is oil. This should be the source of work and food for the population of Iran. Its exploitation should properly be our national industry, and the revenue from it should go to improve our conditions of life." Most American newspapers, however, were unsympathetic to Mossadegh's plea on the grounds that he was defying international law and threatening the flow of oil to the free world. The *New York Times*, for instance, decried Iran as a "defiant scorner" of the United Nations, and further blamed "Iranian nationalism and Islamic fanaticism" for carrying the dispute "beyond the field of legality and common sense."

The epic struggle for control of the oil industry helped transform Iranian nationalism from an abstract idea into a movement. "While Reza Shah crafted the vessel, it was Mossadegh who filled it," says Iranian-British scholar Ali Ansari. "Between 1951 and 1953, Persian nationalism became truly Iranian—inclusive, broad-based and with increasing mass appeal." During this period, many Iranians came to hope the United States would emerge as their friend and protector. Most of the Americans who had come to Iran during the first half of the 20th century were teachers, nurses and missionaries who had left highly positive impressions. That view changed abruptly in the summer of 1953, when the United States took a step that made it an object of deep resentment in Iran.

After trying every conceivable way to pressure Mossadegh to abandon his nationalization plan, Prime Minister Winston Churchill ordered British agents to organize a coup and overthrow him. When Mossadegh learned of the plot, he closed the British Embassy in Tehran and expelled all British diplomats, including the agents who were plotting his overthrow. In desperation, Churchill asked President Harry S. Truman to order the newly formed Central Intelligence Agency to depose Mossadegh. Truman refused. "The CIA was then a new agency, and Truman saw its mission as gathering and collecting intelligence, not undermining or overthrowing foreign governments," says James Goode, a historian at Grand Valley State University in Michigan who was a Peace Corps volunteer in Iran and later taught at the University of Mashhad. "He was almost as frustrated with the British as he was with the Iranians."

After President Dwight D. Eisenhower took office in 1953, however, U.S. policy changed. Secretary of State John Foster Dulles was eager to strike back against growing Communist influence worldwide, and when the British told him that Mossadegh was leading Iran toward Communism—a wild

HENRI BUREAU / SYGMA / CORBIS

THE UNITED STATES SIDED WITH IRAQ, WHICH IT SAW AS A BULWARK AGAINST SHIITE MILITANCY THAT THREATENED SUNNI MONARCHIES.

distortion, since Mossadegh despised Marxist ideas—Dulles and Eisenhower agreed to send the CIA into action.

"The intense dislike that Dulles and Eisenhower had toward Mossadegh was visceral and immediate," says Mary Ann Heiss, a historian at Kent State University who specializes in early cold war history. "They were not interested in negotiation at all. For Dulles, coming from a corporate law background, what Mossadegh had done seemed like an attack on private property, and he was bothered by what he saw as the precedent that it might be setting. He was also worried about the possibility that the Soviet Union might gain a foothold in Iran. . . . It was all very emotional and very quick. There was no real attempt to find out who Mossadegh was or what motivated him, to talk to him or even to respond to letters he was sending to Washington."

In August 1953, the CIA sent one of its most intrepid agents, Kermit Roosevelt Jr., grandson of president Theodore Roosevelt, to Tehran with orders to overthrow Mossadegh. Employing tactics that ranged from bribing newspaper editors to organizing riots, Roosevelt immediately set to work. From a command center in the basement of the U.S. Embassy, he managed to create the impression that Iran was collapsing into chaos. On the night of August 19, an angry crowd, led by Roosevelt's Iranian agents—and supported by police and military units whose leaders he had suborned—converged on Mossadegh's home. After a two-hour siege, Mossadegh fled over a back wall. His house was looted and set afire. The handful of American agents who organized the coup were, as Roosevelt later wrote, "full of jubilation, celebration and occasional and totally unpredictable whacks on the back as one or the other was suddenly overcome with enthusiasm." Mossadegh was arrested, tried for high treason, imprisoned for three years, then sentenced to house arrest for life. He died in 1967.

The 1953 coup put an end to democratic rule in Iran. After Mossadegh was deposed, the CIA arranged to bring Mohammad Reza Shah back from Rome, where he had fled during the pre-coup turmoil, and returned him to the Peacock Throne. He ruled with increasing repression, using his brutal secret police, Savak, to torture opposition figures. No independent institutions—political parties, student groups, labor unions or civic organizations—were tolerated during his quarter century in power. The only place dissidents could find shelter was in mosques, which gave the developing opposition movement a religious tinge that would later push Iran toward fundamentalist rule.

Throughout the cold war, relations between Washington and Tehran were exceedingly close, largely because the Shah was, as former Secretary of State Henry Kissinger wrote in his memoir, "that rarest of leaders, an unconditional ally." Iranians, for their part, came to see the United States as the force that propped up a hated dictatorship. "Iranians traditionally believed that the United States was not a colonial power, and older people remembered [President] Woodrow Wilson's anti-colonial views," says Mansour Farhang, who was the revolutionary government's first ambassador to the United Nations and now teaches history at Bennington College. "Even Mossadegh initially had great goodwill toward the United States. But during the 1950s and '60s, largely as a result of the 1953 coup and concessions the Shah made to the Americans, a new generation emerged that saw the United States as imperialist and neo-colonialist. As time went by, this perspective became completely dominant."

Flush with money from oil revenues, the Shah sought to transform Iran into a regional military power. The United States sold him tens of billions of dollars' worth of advanced weaponry, which brought huge profits to U.S. arms manufacturers while securing Iran as a powerful cold war ally on the Soviet Union's southern border. In the long run, though, this policy would have dire repercussions.

GOING NUCLEAR

The eight-year Iran-Iraq War (left) "deepened and widened anti-American feeling in Iran," says a scholar. President Ahmadinejad (top) exploits his nation's nationalism to justify crackdowns and says his nuclear development is for energy only.

"Some of the things the Shah purchased from us were far beyond his needs," notes Henry Precht, an American diplomat who served in Tehran during the 1970s and later became the State Department's desk officer for Iran. "Prestige and his fascination with military hardware played a great part. There was no rational decision-making process. It was the same way on the civilian side. There was tremendous waste and corruption. Shiploads of grain would arrive and there were no trucks to offload them, so they would just heap the grain in mountains and set it afire."

Anger at the U.S. military presence and the Shah's dictatorial rule culminated in a national uprising in 1979. It was Iran's last modern revolution, like previous ones, a rebellion against a regime that was seen to have sold out to a foreign power. Nearly every important group in Iranian society joined the anti-Shah uprising. Muslim clerics were prominent among its leaders, but so were others ranging from pro-Soviet communists to democrats who had supported Mossadegh in the 1950s. In one of the most astonishing political turnarounds of the 20th century, the Shah, who many in Washington and elsewhere had come to see as invulnerable, was overthrown and forced to flee. He left Iran on January 16, 1979, and after stays in Egypt, Morocco, the Bahamas and Mexico, was admitted to the United States for medical treatment on October 22 of that year. Many Iranians saw this as evidence that the Carter administration was plotting to place him back in power. Thirteen days later, militants seized the U.S. Embassy in Tehran. Fundamentalist Shiite clerics used the crisis to crush moderate factions, consolidate control over the new government and transform Iran into a theocratic state under Ayatollah Khomeini, who had returned from exile in Paris on February 1, 1979.

The deepening hostility between Tehran and Washington led to a catastrophe that no one in Iran had anticipated. Saddam Hussein, dictator of neighboring Iraq—which had been a rival of Iran since the two countries were the kingdoms of Persia and Mesopotamia—saw that Iran suddenly lacked a powerful ally and that its military was in disarray. Seizing this chance, he launched an invasion of Iran in September 1980. The ensuing war lasted eight years, devastated the Iranian economy and cost Iran as many as one million casualties, including thousands who were killed or incapacitated by chemical weapons. Iraq saw between 160,000 and 240,000 killed.

The United States, still fuming over the hostage crisis, sided with Iraq, which it saw as a bulwark against Shiite militancy that threatened perceived U.S. interests such as the stability of the Sunni monarchies in oil-producing countries. President Ronald Reagan twice sent a special envoy, Donald Rumsfeld, to Baghdad to discuss ways the United States could help Saddam. In the wake of his visits, Washington provided Iraq with aid, including helicopters and satellite intelligence that was used in selecting bombing targets. "The war had two profound effects," says Fawaz Gerges, a professor of international relations and Muslim politics at Sarah Lawrence College. "First, it deepened and widened anti-American feeling in Iran and made anti-American foreign policy a fundamental raison d'être of the Iranian government. Second, Iraq's use of chemical weapons, and the American role in preventing an in-

STEPHEN CHERNIN / AP IMAGES; SHAHPARI SOHAIE / REDUX

THE COLORS OF NATIONALISM

In 2007, thousands of Iranians gathered to celebrate the 28th anniversary of the Islamic Revolution. But low wages, spiraling inflation, suffocating social controls and other problems have increased dissent, which lies just beneath the surface.

vestigation [of them] and shielding Saddam from criticism, convinced the [Iranian] mullahs that they needed to pursue a program to develop unconventional weapons of their own."

The hostage crisis, the Iran-Iraq War and the religious regime's intense efforts to undermine U.S. power in the Middle East and elsewhere have turned Iran and the United States into bitter enemies. To many Americans, the blame seems to lie only with a radical, aggressive and almost nihilistic regime in Tehran, which has threatened Israel, opposed U.S. efforts to resolve Middle East conflicts and has been linked to terrorism in cities from Berlin to Buenos Aires.

Iran's current leaders—conservative Supreme Leader Grand Ayatollah Ali Khamenei and the provocative, incendiary president, Mahmoud Ahmadinejad—skillfully exploit the country's nationalist sentiment, citing threats and demands from Washington to justify harsh crackdowns on students, labor unions, women and other dissatisfied groups. Sometimes Ahmadinejad even defends these draconian measures while sitting in front of a photo of majestic Mount Damavand, a traditional nationalist symbol.

"The regime feeds off American hostility," says Robert Tait, who spent nearly three years in Iran as a correspondent for the *Guardian* until he was forced to leave last December when the government refused to renew his visa. "Every time there's another threat from Washington, that gives them more oxygen. They won't be able to use this threat indefinitely. There's a widespread feeling in Iran that the way things are isn't the way they should be. People believe that too much isolation has not been good for them. But as long as there seems to be a clear and present danger, the government has what it sees as a justification to do whatever it wants."

This justification is especially convenient at a time when growing numbers of Iranians are expressing their unhappiness with the government. Low wages, spiraling inflation, high prices for gasoline, discrimination against women, suffocating social controls, religious-oriented university curricula and the spread of social ills like prostitution and drug abuse have angered much of the population. Some of this dissent hovers just beneath the surface of everyday life—as in Tehran, where a bus has been converted into a mobile discothèque to evade religious authorities. Other forms of dissent are more overt, and even go so far as to co-opt government idioms. Last fall, striking workers at a sugar factory chanted "Our salary is our absolute right!"—a play on the government slogan "Nuclear energy is our absolute right."

The rhetoric of nationalism no longer satisfies Iranians. Their country has finally achieved independence, but now most wish for more: freedom, prosperity and engagement with the outside world. Iran will not be truly stable until its leaders offer them those great prizes.

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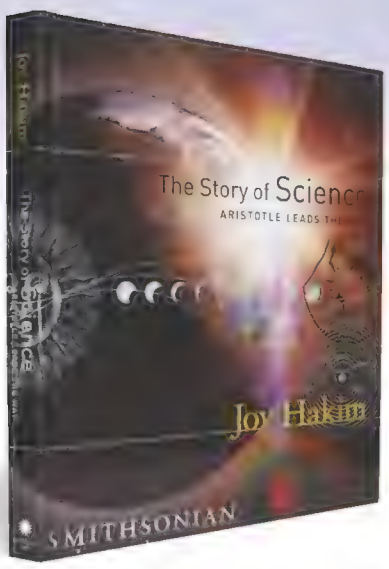

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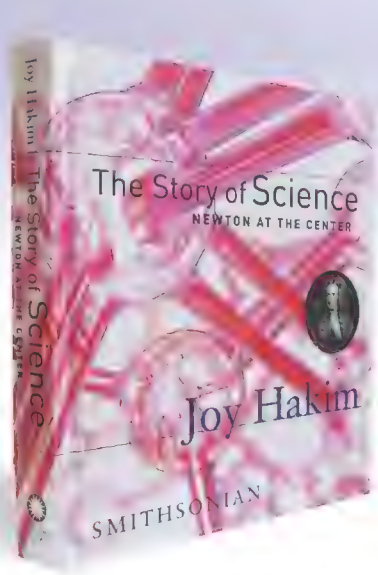

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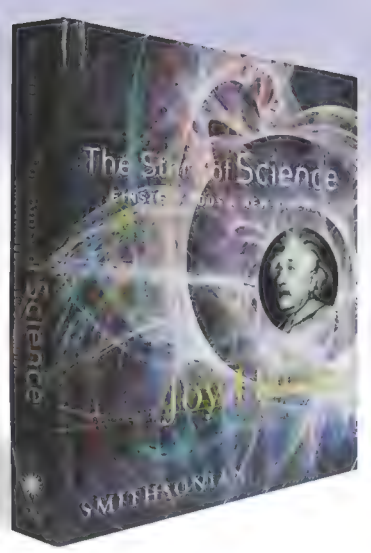

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The Last Doughboy

HE LIED ABOUT HIS AGE TO SERVE IN WORLD WAR I. TODAY, AT 107, HE SAYS HE FEELS AN "OBLIGATION" AS AMERICA'S ONLY LIVING LINK TO THE GREAT CONFLICT

By Richard Rubin PHOTOGRAPHS BY KAREN KASMAUSKI

FRANK WOODRUFF BUCKLES was visiting the Kansas State Fair in Wichita one day in the summer of 1917 when, seeing a Marine Corps recruiting booth, he decided to enlist; the nation had just entered World War I. Buckles was only 16, but he told the recruiting sergeant he was 18. The recruiter, perhaps suspecting the boy's real age, offered a fib of his own: he told Buckles he had to be at least 21 to become a United States Marine. Undaunted, Buckles passed another booth and tried his luck with a Navy recruiter. He, too, turned Buckles down, saying he had flat feet, which he didn't.

But Buckles wouldn't give up. The Great War, which had started in 1914, was "an important event," he explains. "The world was interested in it. I was interested." So he traveled south to try his luck with recruiters in Oklahoma City. Again, the Marines turned him down. So did the Navy. But an Army sergeant passed him on to a captain, who asked him for a birth certificate. "I explained that when I was born in Missouri, birth certificates were not a public record," Buckles recalls. "It would be in the family Bible. And I said, 'You wouldn't want me to bring the family Bible down here, would you?' He said, 'Go on, we'll take you.'" And so it was that in August of 1917, Frank

At age 107, Frank Buckles proudly wears the French Legion of Honor medal, one of many honors to have come his way lately.

Hungry for action, Buckles (above: as a private) was destined to spend the war behind the lines.

Buckles joined 4.7 million Americans recruited or conscripted for the new American Expeditionary Forces. They are all gone now—all except Buckles, who turned 107 this past February. He is the last living American veteran of the Great War.

After basic training, Buckles joined the First Fort Riley Casual Detachment and shipped out for England in December 1917. To Buckles' dismay, his unit was held in reserve there, while others, under the command of Gen. John J. Pershing, were in France fighting the Germans.

Buckles spent most of his time in England on a motorcycle with a sidecar, shuttling officers, delivering dispatches, driving the occasional ambulance and trying to get to the action. "I let any person who had any influence at all know that I wanted to go to France," he says.

Finally, after six months in England, Buckles managed to get himself sent to France, where he was assigned to escort an American lieutenant—a dentist—to Bordeaux. He was in the right country, but still miles from the fighting. As the war wound down, he continued to chafe behind the lines.

He was still there when the shooting stopped on November 11, 1918, having claimed 8.5 million lives. "I wasn't disappointed that the war ended," he recalls. "[But] I would have liked to accomplish what I had started out for."

Following the armistice, Buckles' unit was ordered to escort 650 prisoners of war back to Germany. He remembers them as mostly friendly and cultured. Some were professional musicians, a few conductors; they staged concerts. "Where they got the instruments, I don't know," he recalls. "But we would take boards and put them on boxes to make benches and listen to the concert." One late night he found himself about to exchange blows with a young prisoner over some dispute long since forgotten. "A big German on each side just took us by the back of the arms and read the law to us," he recalls. That was as close as Buckles got to fighting any Germans. He was sent home in January 1920 and mustered out of service.

Those who fought in World War II are now celebrated as "The Greatest Generation," but there were no such honors for the veterans of Frank Buckles' war. Many came home to find their jobs gone or their farms in a terrible state.

"I was lucky—wherever I went, I got a job," Buckles says. After paying his way through business school, he worked in Toronto, then New York City and then on steamships, which took him all over the world. He was running the Manila office of the American President Lines when the Japanese invaded the Philippines in December 1941 and promptly took him prisoner. He spent 39 months in prison camps. "When I got down to 100 pounds, I quit looking at the scales," he says. He also developed beriberi, a degenerative disease caused by malnutrition, which affects him to this day. Nevertheless, he led a daily calisthenics class for his fellow prisoners. "I explained to them," he recalls, "that we're under severe circumstances, but you must keep yourself in shape—for when the war is over." On February 23, 1945, they were all liberated in a raid led by the U.S. Army's 11th Airborne Division. Frank Buckles was then 44 years old.

He returned home to the United States, got married, became a father and bought more than 300 acres of gently rolling meadows in West Virginia, where his ancestors had farmed more than two centuries earlier. Today, he remains active on the farm, raising cattle and maintaining his 18th-century farmhouse. He spends a good bit of time in a small, sunny reading room filled with World War I artifacts—including his doughboy's cap, letters he sent home from France and a German belt buckle inscribed with *GOTT MIT UNS*, or "God Is With Us." As the last of his kind, Buckles receives a lot of mail from strangers, writing to thank him for his service. He responds to all of it, with the help of his daughter, Susannah, 53. "I know that I have an obligation," he says, "to keep the [next generation] aware that we had a World War I."

Buckles stopped driving a few years ago, but he still makes forays with Susannah to inspect his farm and to visit nearby Charles Town. He also travels to events around the country, and was invited to the White House last March, when President Bush recognized his World War I service. "That was interesting," he says. "I went to the White House and sat in the Oval Room, and here came President Bush . . . and he asked me, 'Where were you born?' And I said, 'That's exactly the words that General Pershing used,'" when Corporal Buckles met him after the war.

Frank Buckles isn't surprised to be a centenarian. His father lived to 95, his grandmother to 96. "I had been warned by my two aunts, both of whom made it past 100, to be prepared—that I was going to live past 100 years old," he says. "I see no reason why I shouldn't live to 115."

RICHARD RUBIN *is writing a book about America's World War I veterans, to be titled* The Last of the Doughboys.
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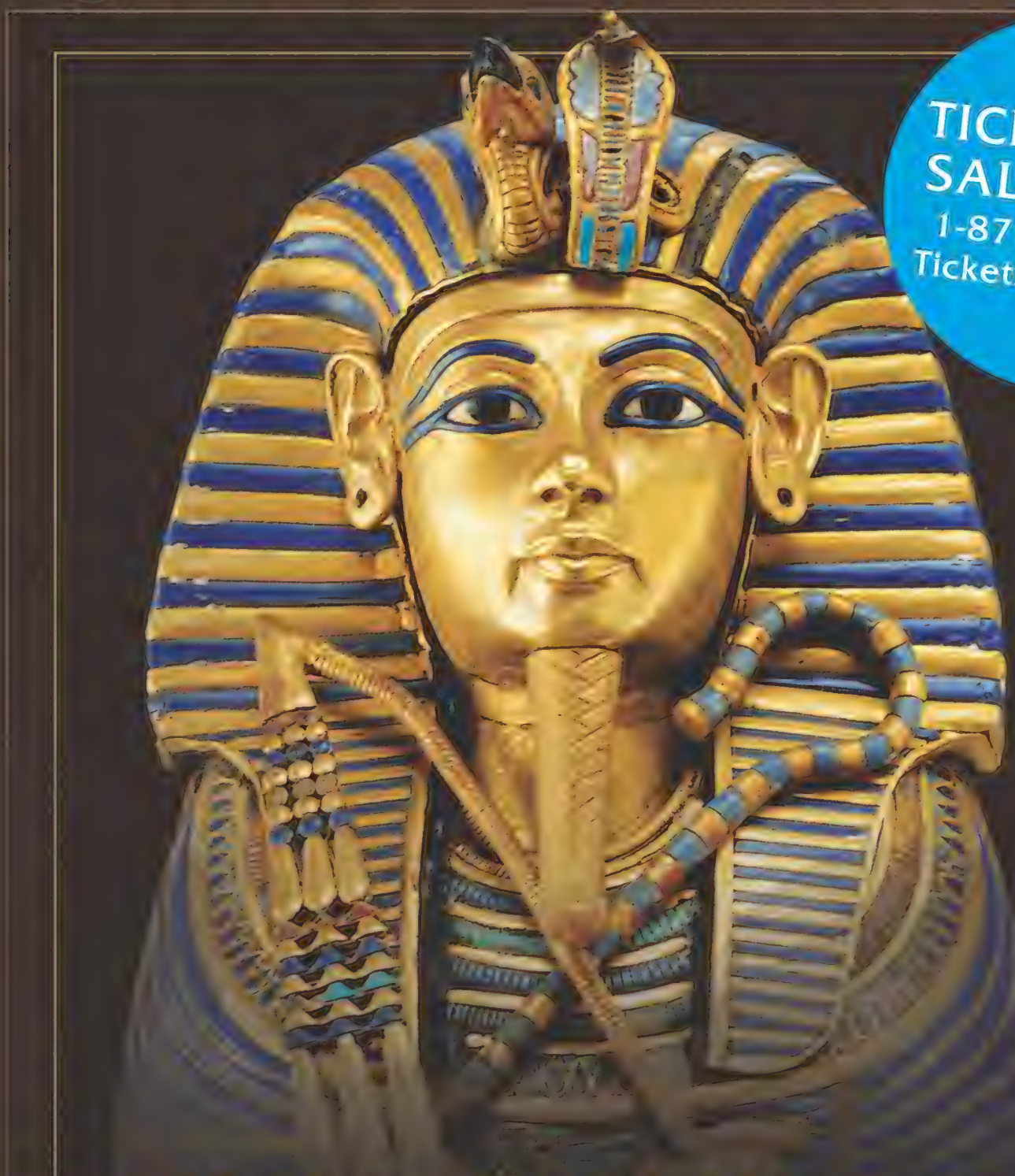

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Bernini's life-size *Apollo and Daphne* (detail), which he began at age 24 in 1622 and finished in 1625, portrays the nymph at the moment she's being turned into a laurel tree to escape the advances of the lustful god Apollo.

Bernini's Genius

The Baroque master animated 17th-century Rome with his astonishing sculpture and architecture

BY ARTHUR LUBOW

Gian Lorenzo Bernini was said to have been only 8 when he carved a stone head that "was the marvel of everyone" who saw it, according to a contemporary biographer. He was not much older when he dazzled Pope Paul V, who reportedly declared, "We hope that this youth will become the Michelangelo of his century." Prophetic words: over a long lifetime, Bernini undertook commissions for eight popes, transforming the look of 17th-century Rome as Michelangelo had helped shape Florence and Rome a century before. Much of the Baroque grandeur of the Eternal City—its churches, fountains, piazzas and monuments—can be credited to Bernini and his followers.

Yet, despite his artistic stature, Bernini is only now receiving his first major American exhibition—at the J. Paul Getty Museum in Los Angeles (through October 26) and then at the National Gallery of Canada in Ottawa (November 28, 2008-March 8, 2009). One explanation for the oversight is obvious,

An architect as well as a sculptor and painter, Bernini (above: at about 27, in a c. 1625 self-portrait) designed the Vatican's monumental Piazza of St. Peter's (top) between 1656 and 1667.

FRANZ-MARC FREI / CORBIS; ASHMOLEAN MUSEUM, OXFORD, ENGLAND; P. 76 PIROZZI / AKG-IMAGES

says Catherine Hess, associate curator of sculpture and decorative arts at the Getty and a co-curator of the exhibition. "How do you move Piazza San Pietro?" Like that grand piazza, which Bernini designed in front of St. Peter's Basilica in the Vatican, the enormous marble sculptures for which the artist is best known are for all practical purposes untransportable. What does that leave? As it happens, a significant body of work: especially the portrait busts, a genre in which the young Bernini demonstrated that he was head and shoulders above the competition. "All the things that make Bernini great can be found in his portrait busts," says Hess.

By mid-career, as he became busier with large-scale ventures, Bernini did fewer busts—"only popes and kings, people you couldn't say no to," says exhibition co-curator Andrea Bacchi, professor at the University of Trento in Italy. But Bacchi believes one reason that the sculptor stopped doing busts after he got successful is that he valued them too highly to allow his assistants to take over the carving. By focusing this exhibition on portrait busts—including rare Italian loans that come as implicit thanks for the Getty's agreement last year to return some 40 antiquities said to have been excavated and exported illegally—the curators present a Bernini retrospective that is both intimate and revealing.

Bernini was noted for his ability to capture the essence of his subject's personality as well as appearance. His portrait of Pedro de Foix Montoya (c. 1622-23) was regarded as stunningly lifelike.

Bernini's prodigious output was the result of his skill at organization and his tireless self-discipline. He said that if he put together all the hours he spent on meals and sleep in his lifetime, he doubted whether they would add up to a full month. (A slim, dark-complexioned man who avoided the sun for fear of migraine headaches, Bernini typically ate only a small plate of meat and a large quantity of fruit each day.) At a young age, he was already managing a supporting cast of talented assistants. And he himself would labor for seven hours without interruption on a block of marble. According to a friend's description, the sculptor could carry on a lively conversation about the topics of the day, all the while "crouching, stretching . . . marking the marble with charcoal in a hundred places, and striking with the hammer in a hundred others; that is, striking in one place, and looking in the opposite place." Often Bernini proceeded without a terra-cotta model and sometimes even without a subject in front of him, realizing a vision that resided in his mind.

Indeed, he was a highly original thinker, not merely a consummate craftsman. In the many different arts he pursued—sculpture, architecture, painting, even playwriting—his works expressed ideas. Behind every Bernini masterpiece there lies a *concetto*, its governing concept or conceit. One concetto that fascinated the sculptor throughout his career was the attempt to overcome the limitations of his materials. When he was carving white marble, for example, he tried to

A frequent contributor, **ARTHUR LUBOW** *is based in New York City. He wrote about the arts and culture of Bhutan in March 2008.*

ANDREA JEMOLO / CORBIS

ISTITUTI MUSEALI DELLA SOPRINTENDENZA SPECIALE PER IL POLO MUSEALE FIORENTINO, FLORENCE, ITALY

Bernini was having an affair with Costanza Bonarelli, the wife of one of his assistants, when he created this portrait of her—head turned, lips parted, breast partly exposed—in 1636-38.

suggest color: fashioning the eyes in his portrait busts, he would incise the irises deeply so that they lay in shadow and appeared dark. Even more ambitiously, he sought to imbue cold, inanimate stone with warmth, movement and life. Instead of positioning the subject of his busts straight on, he might have the head turning to the side or the fabric of the garment askew. In a number of his best sculptures, he pioneered what has been called a "speaking likeness," capturing a person in action or at the point of uttering words. He explained to an associate that "to make a successful portrait, one should choose an action and attempt to represent it well; that the best time to render the mouth is when [the subject] has just spoken or is just about to begin speaking; that one should try to catch this moment."

Cardinal Maffeo Barberini (later Pope Urban VIII) was once part of a group admiring a new Bernini bust (above left) of Monsignor Pedro de Foix Montoya—sharp-cheeked, furrow-browed and thick-mustached—when the monsignor himself entered the room. Barberini went up and touched the priest and said, "This is the portrait of Monsignor Montoya," then faced the marble bust and declared, "And this is Monsignor Montoya."

In his long career, no modeling job was more important to Bernini than fashioning his own image. "He wanted to create a legend around himself," Bacchi says. Recent scholarship reveals that the two seminal and supposedly independent biographies of the artist, begun toward the end of his life (one by his son Domenico), relied on information that Bernini himself supplied. And much of that he may have doctored. Many historians, for instance, believe that Bernini shaved a few years off his age when recounting the tale of the marvelous stone bust he claimed to have carved at age 8; he was probably in his early teens. Pope Paul V's comparison of Bernini to Michelangelo was another notion that the sculptor vigorously promoted. "If it isn't something that he invented, which he may have, it is something that he fostered very much in the later years of his life," says Tod Marder, professor of art history at Rutgers University. "Bernini was very familiar with the accounts of Michelangelo. He used that familiarity in cobbling together an account of his own life and career." Consequently, as Bacchi observes, "it is a strange fact that you know so much about the life of the artist from the artist himself, but you have to double-check everything."

At the time of Bernini's birth, in 1598, painting was the exciting art form in Rome—especially the new and startling realism of Caravaggio. Sculpture had become the domain of a worn-out Mannerism, replete with formulaic affectations and exaggerations. Bernini's father, Pietro, was such a sculptor. Of Tuscan origins, he had moved to Rome from Naples with his Neapolitan wife, Angelica Galante, when Gian Lorenzo was about 8. Ruled by the popes, who were constructing lavish churches and monuments, Rome was the place for a sculptor to find work.

Pietro encouraged his gifted son. When a visitor to his studio asked if he felt threatened by the prospect of his child surpassing him, Pietro replied, "It doesn't bother me, for as you know, in that case the loser wins." Among the powerful and well-connected art connoisseurs who recognized the boy's talent was Cardinal Scipione Borghese, who commissioned four colossal marble statues from him—*Aeneas, Anchises, and Ascanius Fleeing Troy*; *David*; *The Rape of Persephone*; and *Apollo and Daphne.* These established Bernini, in his early to mid-20s at the time, as the city's pre-eminent sculptor, and they continue to dazzle present-day visitors to the Villa Borghese, the cardinal's palatial Roman residence, now a museum.

With his *David*, Bernini took a subject that other great sculptors had tackled before him and made it his own. Instead of depicting the victorious warrior with the head of Goliath (as Florentine sculptor Donatello had done), or (like Michelangelo) showing the coolly confident youth before the battle, Bernini chose the most dramatic moment—when David is about to let fly the stone from his taut sling-shot. Bernini's method was to seize and freeze the revelatory moment; he positioned his statues against walls, so that a spectator would take in the work from a prescribed perspective. With the *David*, you were meant to stand facing the young warrior, as Goliath did.

The fervent emotion and theatricality of Bernini's c. 1668 portrait of Gabriele Fonseca, Pope Innocent X's Portuguese physician, represents the height of the Baroque style the artist pioneered.

In his sculpture of the mythological Daphne, who was transformed into a laurel tree by her father to elude the unwanted attentions of Apollo, Bernini showed Daphne's skin changing to bark, her toes elongating into root tendrils and her fingers sprouting leaves, just as the lustful Apollo, his prize in his grasp, begins to realize what is happening. The *Apollo and Daphne* is a jaw-dropping feat of virtuosity. "In my opinion, not even the ancients did anything to equal it," Bacchi says. The roughness of the bark, the translucence of the leaves, the nymph's flying tresses—all are carved with such exquisite specificity that, once again, it is easy to overlook the audacity of the concetto. The process of metamorphosis was a subject for painters, not something to show by chiseling and drilling hard stone. And yet, wasn't metamorphosis a sculptor's task? Carving a block of stone into a lifelike form could be seen as a supernatural—even divine—feat.

When he finished the sculpture, according to his first biographer, Filippo Baldinucci, Bernini "attracted everyone's eye" and was pointed out in public. Yet he wasn't, in truth, personally responsible for the work's most acclaimed features. As Jennifer Montagu, a co-curator of the exhibition, has written, Bernini focused his efforts on the main figures—and the concetto. The execution of the roots, branches and hair tresses in this sculpture was largely the work of his assistant, Giuliano Finelli, who bitterly resented the lack of credit and went on to have a successful independent career. (Finelli's own work is also on display in the Getty show.) Finelli maintained a lifelong attention to minute detail. Bernini's work, however, was about to enter a new phase.

JOSEPH MARTIN / AKG-IMAGES

Bernini combined light, sculpture and painting to create a sense of drama and movement in *The Ecstasy of St. Teresa* (1645-52), the centerpiece of his Cornaro Chapel in Santa Maria della Vittoria.

MASSIMO LISTRI / CORBIS

In 1623, Barberini, his friend and patron, was elected Pope Urban VIII. As Bernini's son Domenico relates, the new pope summoned the young artist to his side. "Your luck is great to see Cardinal Maffeo Barberini Pope, Cavaliere," he said, "but ours is much greater to have Cavalier Bernini alive in our pontificate." For the 20 years of Urban VIII's tenure, Bernini enjoyed unparalleled access to Urban and an abundance of papal commissions—not only sculptures, but entire architectural environments.

His most ambitious project was for St. Peter's interior. From 1624 to 1633, he designed and oversaw the construction of a massive bronze *baldacchino*, or canopy, above St. Peter's tomb. Traditionally, a tomb of this importance would have been covered with a small temple-like structure. Instead, Bernini fashioned four twisting columns as posts, which he topped with something that resembled a bed or processional canopy. Slender, leafy branches climb the columns, and from the roof, clothlike panels and tassels hang—all in bronze. "People at that time used to make ephemeral decorations out of paper and have them look monumental," Bacchi observes. "Bernini did monumental works that look like ephemeral works."

The imposing piazza that Bernini laid out in front of St. Peter's about a quarter of a century later, at the direction of Pope Alexander VII, is bordered by a free-standing, grandly curved double colonnade that he said was meant to represent the motherly arms of the church. Within the basilica, the contemporaneous *Cathedra Petri*, or throne of St. Peter, rivals the artist's earlier baldacchino—both for the elaborate gilded bronze sculptures produced by his studio and for its drama, provided in part by the golden light that pours through a yellow stained-glass window above it.

Bernini spent his entire adult life in Rome and, not surprisingly, he was chauvinistically Roman. His only known absence from the city was a trip to France in 1665, when he was invited by King Louis XIV to design an addition—ultimately rejected—to the Louvre royal palace. Throughout his time in France, he complained. All of Paris, he said, was worth less than a painting by the Italian artist Guido Reni. He compared the chimney-dotted city skyline to a wool-carding comb and characterized the royal palace in the Tuileries as "a big little thing." He complimented the architect François Mansart but noted how much greater he might have been had he lived in Rome.

Having rendered the grand-scale illusions of the Borghese statues and the Vatican commissions, Bernini was after something subtler when he returned in the 1630s to doing the portrait busts that he had first undertaken as a youth. "When Bernini came back to sculpture, it was not so virtuosic, not so many fireworks," says Bacchi. "He tried to capture life in a more synthesizing way—not to capture every detail but to give the impression of life."

A prime example is the bust he made of Scipione Borghese in 1632, generally considered one of the great portraits in art

In his landmark c. 1651 *Fountain of the Four Rivers* (a detail of the figure symbolizing the River Ganges) in Rome's Piazza Navona, Bernini animated the massive sculpture by the dynamic way in which he integrated running water with stone.

history. The sculptor portrayed the prelate's fat jowls and neck, the pockets around his eyes and the quizzically raised eyebrows (below) in such a lifelike fashion that one comes away with a palpable sense of what it would have been like to be in the prelate's presence. His head turned slightly to the side, his lips apart—is he about to share some titillating gossip?

Even more extraordinary is the bust that Bernini completed in 1638 of Costanza Bonarelli, the wife of one of the sculptor's assistants and also Bernini's lover. When he discovered she was also having an affair with his younger brother, Bernini—known for an explosive temper—reacted violently, attacking his brother and sending a servant to slash Costanza's face with a razor. What ultimately happened remains unclear, but Bernini was fined 3,000 scudi (a huge sum at a time when a sizable house in Rome could be rented for 50 scudi a year). The scandal caused Urban VIII to intervene and more or less command Bernini to settle down and marry, which he soon did, at age 40, in May of 1639. His wife, Caterina Tezio, the daughter of a prominent lawyer, would bear him 11 children, 9 of whom survived. Now ultra-respectable, he attended daily Mass for the last 40 years of his life.

Bernini's bust of Costanza (p. 79) is a work with few precedents. For one thing, women were not usually sculpted in marble unless they were nobility or the statues were for their tombs. And in those sculptures, they were typically portrayed in elaborate hairdos and rich dresses—not depicted informally, as Bernini had Costanza, clad in a skimpy chemise with her hair unstyled. "He takes out all the ornaments that were important to the 17th-century portrait and focuses on the person," says Bacchi. "You see a little of her breast, to think she is breathing, the crease of her neck, so that she seems to be moving." The portrait engages the viewer so intensely, Bacchi adds, "because it is just her expression, there is nothing to distract you." With her mouth slightly open and her head turned, Costanza is radiantly alive. In another way, too, the bust is exceptional. Marble was expensive. Bernini's portrait of Costanza is thought to be the first uncommissioned bust in art history made by the sculptor for his own enjoyment.

Bernini sculpted two marble busts of his friend and patron Scipione Borghese (detail below). When the first developed a crack just before it was finished, the artist started over and made another.

In a career that continued until paralysis stilled his hand shortly before his death, at 81, in 1680, Bernini enjoyed almost uninterrupted success. His only serious setback came in the 1640s, when the death of Urban VIII brought in a new pope, Innocent X, who favored Bernini's rivals, including the architect Francesco Borromini and the sculptor Alessandro Algardi. A high-profile architectural project for Bernini to add two bell towers to St. Peter's was canceled, requiring an already constructed tower to be torn down. But even Innocent X could not gainsay Bernini's talent. When the pope was commissioning a new fountain for the Piazza Navona, Bernini, uninvited, composed a model for it. Innocent X was brought into a room that contained the model and he was smitten. "The only way to resist executing his works is not to see them," he reportedly said. Featuring an obelisk, which seems to rise unsupported from a rough outcrop of travertine, around which real flowing water and muscular figures of marble disport, the *Fountain of the Four Rivers* (detail, opposite) is a city landmark to this day.

Bernini was always after the maximum theatrical impact. Indeed, along with his other talents, he was also a professional dramatist. In one of the plays that he wrote, he made a wall of water rush at his audience, diverting it through sluices at the last gasp-inducing moment. Another one of his offerings combined two plays proceeding simultaneously on a stage divided by a scrim and watched by two separate audiences; the stories cleverly interlocked, and each side was expected to overhear the other.

To a modern sensibility, Bernini the sculptor at times can seem too much the showman, rummaging through a bag of tricks to please his audience. He lived long enough to hear such criticisms. Notwithstanding his enormous celebrity (crowds gathered along his route to France in 1665, as if, the artist said, he were an elephant), he correctly predicted that his reputation would wane over time.

This pessimism may explain why Bernini was so intent upon stage-managing his biographies. It could also shed some light on one of his most renowned achievements, *The Ecstasy of St. Teresa* (p. 81), which he executed for a side chapel in Rome's Church of Santa Maria della Vittoria from 1645 to 1652, and which he called his most beautiful creation. At its center is the white marble sculpture in which Teresa, convulsed in ecstatic pain, yields to an angel about to pierce her with the golden arrow of divine love. On either side of Teresa, Bernini placed a box with seats, of the kind found in theaters, containing four men. But in each box, only the man closest to Teresa looks at her. The others are chatting or, in one case, reading a book. Could Bernini have been anticipating a future in which his achievements would be similarly ignored? If so, he would be heartened to see his exuberant genius once again receiving its due.

View a narrated slide presentation of Bernini's works at Smithsonian.com/bernini

ARRIGO COPPITZ / GALLERIA BORGHESE, ROME ITALY; P. 82 JÜRGEN RAIBLE / AKG-IMAGES

For the first time there's no fishing for
The search is on

Scrapped fishing boats in Fort Bragg (salvagers Bruce Abernathy and his son David) testify to the sharp decline of chinook salmon (opposite: a male ready to spawn).

chinook salmon on the California coast.
for why the prize catch is so scarce

Farewell to the King?

By Abigail Tucker

PHOTOGRAPHS BY RYAN ANSON

The salmon-boat cemetery

in Fort Bragg, a fishing port tucked into shaggy pines about 150 miles north of San Francisco, is full of bleached and peeling hulls. Over the years many California vessels have landed in Bruce Abernathy's front yard, pitched at steep angles among the weeds, some still rigged with trolling poles. The *Anita II*, the *Dag*. Eventually Abernathy's son David takes them apart with a tractor and chain saw and sells what he can for parts. Sometimes all that's left is a scrap with a painted-on name: *My Pet*.

Bruce Abernathy himself doesn't watch the demolitions. He finds somewhere else to be, or he stays inside his house, with its many framed prints of trim little ships atop frisky seas. The fisherman turned resale man, and lately junk dealer, has "a lot of remorse" about what's happening outside his window beyond the hot pink rhododendron bush. "I know almost everybody who owned these boats," he said. "Boats become part of you, like a wife."

Thirty years ago there were several thousand salmon boats in California. More recently, as the fish

became scarce, only a few hundred worked the coast. Then salmon populations crashed, and this year for the first time U.S. officials canceled all ocean salmon fishing off California and most of Oregon, and curtailed it off Washington, a $300 million loss. When I visited Fort Bragg, in late May, the harbor felt about as cheerful as a junkyard. The docks should have quaked with activity, but the mooring basin was quiet except for the hoarse bark of sea lions. The fishermen with the biggest boats hoped to go way out after tuna later in the season; others had already joined roadwork crews or cobbled together odd jobs. Disaster relief money would be on the way, but to many second- and third-generation fishermen, a summer without salmon felt like the end of the line. For the better part of a century the fish supported Fort Bragg, home of the World's Largest Salmon Barbeque, at which local politicians flip fillets on the grill and tourists come from far and wide to taste one of the most sought-after fish in the sea, the chinook salmon, a.k.a. the king.

The sudden decline of California's chinooks, most of which originate in the Sacramento River, has shaken scientists as well as fishermen. Typically several hundred thousand adult fish return from the sea to the river in the fall. Last autumn, only about 90,000 made it back, and fewer than 60,000 are expected this year, which would be the lowest number on record. "Usually when something like that happens, you can point to something dramatic, an oil spill, closing of hatcheries, an earthquake," said Donald McIsaac, executive director of the Pacific Fishery Management Council, the regulatory group that advised U.S. officials to halt this year's salmon fishing. But no such catastrophe has been definitively linked to the shortage.

Salmon is the third most popular seafood in the United States, after shrimp and canned tuna, with about 600 million pounds consumed annually. Most of the fresh meat is Atlantic salmon raised in fish farms. California fishermen bring in about five million pounds of chinook meat in a good year. That's not terribly much, considering the national appetite, but king salmon is the largest and perhaps the choicest variety, owing to its deep reddish pink color (a result of its krill-heavy diet), high omega-3 fatty acid content and rich flavor. It is the stuff of white tablecloth restaurants and fancy markets, not salmon burgers. ("You would never put king salmon in a can," one fish market analyst told me.)

What's more, local chinook, chrome-colored and strong enough to charge up waterfalls, are revered as a symbol. We savor the salmon's story almost as much as its flesh—its epic slog from birth stream to sea and back again, its significance to Native Americans, who saw the fish as a dietary staple and a religious talisman. Salmon still retain something of that spiritual power. Called the "soul food of the North Pacific," king salmon is the flavor of healthy rivers and thriving coastlines. It is a pepper-crusted or pesto-smeared communion with nature, gustatory proof that in a region where cities are sprawling, wildness still waits below the surface—if you will only cast your fly and find it.

There are about a half-dozen salmon species worldwide, and populations are further defined by their rivers of origin and migration seasons. Chinook (*Oncorhynchus tshawytscha*) are found from California's Ventura River to Kotzebue Sound in Alaska to Russia's Andyr River and northern Japan. The species whose sudden disappearance has been in the news, prompting Congressional hearings this past spring, is the fall-run Sacramento River chinook, named for the river to which mature fish return to spawn and the season in which they do so. (The Sacramento River also supports much smaller winter

"Usually when that happens, you can point to something dramatic, an oil spill, an earthquake."

ABIGAIL TUCKER *is the magazine's staff writer. Freelance photographer* **RYAN ANSON** *is based in San Francisco.*

and spring runs, which are classified as endangered and threatened, respectively, and a late-fall run.) After eggs are laid in autumn, young salmon emerge from their gravel nests as early as Christmastime, swimming south a few weeks later. They slink seaward mostly at night to avoid predators, lingering in brackish estuaries to gather strength. As they near the ocean, their bodies change. Their renal systems adapt to salt water. They lose black bars on their sides and gradually assume the silvery color—with a scattering of black spots—that thrills fishermen. "God, they're beautiful," exulted Dave Bitts, of McKinleyville, California, a commercial fisherman for more than 30 years. "That's what a fish is supposed to look like—the whole shape of them, the power of the back, the thickness of the tail."

The fish typically stay at sea three years, ranging thousands of miles in the Pacific and gaining 90 percent of their body mass (between 10 to 50 pounds, though the largest weigh more than 100). Then they head for home, tracing the smell of minerals and organic materials to find their natal streams. It is a brutal journey. The fish stop eating once they hit fresh water, and their bodies begin to deteriorate even as they ascend rapids (the word "salmon" comes from the Latin *salir*, to leap). Ready-to-mate males flush crimson and grow tough-guy hooked jaws for fighting; females search for gravel for a nest. Soon after laying and fertilizing eggs, the exhausted adults die. But the life cycle doesn't stop there. The kings' spawned-out carcasses nourish not only the baby salmon that will take their place but also living things up and down the food chain, stimulating whole ecosystems. Salmon-rich streams support faster-growing trees and attract apex predators like bears and eagles. In certain California vineyards, compounds traceable to salmon can be found in zinfandel grapes.

This is the elegant narrative that people in the West are fighting to preserve, a tale of determination and natural destiny that somehow touches even those of us who don't live there. And yet this ideal of wild salmon is increasingly an illusion.

Coleman National Fish Hatchery, Anderson, California, 4 a.m.: Had it been light, I could have seen the edge of the Cascade Range, which includes Mount Shasta, the Sacramento River's source. But I couldn't make out the hatchery's outbuildings, or anything much beyond a series of long concrete pools, or raceways, illuminated by floodlights.

It dawned on me that the gray current shifting and flickering below the surface of Raceway 5 was actually hundreds of thousands of three-inch-long fall-run chinooks. A hatchery worker scooped up a couple: squiggles with woeful expressions, they were barely princelings, never mind kings. But every so often one would snap itself suddenly out of the big pond, a hint of the athleticism that would one day launch it upstream.

We were there because the hatchery was taking a historic step. Usually, the federal facility—at the northern end of California's Central Valley—releases the juveniles out its back door into Battle Creek, which feeds into the Sacramento River six miles downstream. This year, though, natural re-

To help salmon populations rebound, officials curtailed fishing off Washington and banned it off Oregon and California (salmon fishers in Fort Bragg load crab traps), a $300 million loss. Experts say Sacramento River chinook, which cross the delta on their way to the sea (below), are harmed by pollution and the diversion of water to farms and cities.

MAP: GUILBERT GATES; P. 85 BRANDON COLE

source managers had decided to load 1.4 million fish, about a tenth of Coleman's total stock, into trucks and drive them roughly 200 miles south to San Pablo Bay, above San Francisco Bay, bypassing the entire river, a tactic that state hatcheries have been using for years. I had already been startled to learn that between 50 percent and 90 percent of the Sacramento River's "wild" fall-run chinooks are actually born in hatcheries, which were created to compensate for the loss of spawning grounds to dams. Every autumn, hatchery workers trap returning adults before they spawn and strip them of sperm and eggs. The offspring are incubated in trays and fed pellets. Now this latest batch would not even have to swim down the river.

The shipment was an effort to rekindle future fishing seasons, Scott Hamelberg, the hatchery manager, said: "If you truck a fish from Coleman and bypass certain areas where mortality can happen, you may improve survival. You take out hundreds of miles of avoiding predators, water diversions, pollution, any number of things."

We spoke in his office, which held a shrine to Popeye, a cat who must have enjoyed an extremely happy tenure at the hatchery. Despite the low numbers of returning Sacramento salmon this year, Coleman planned to go ahead with its annual Return of the Salmon Festival in the third week of October, where in years past schoolchildren have shrieked over the chinooks jamming the creek.

Outside, a worker standing waist-deep in the raceway crowded the fish toward a hydraulic pump, using a broom to goad stragglers. Their shadowy forms shot up a transparent tube and into a tank on a waiting truck. In a few hours they would be piped into net pens in the bay, then hauled by boat farther out and released to swim out to sea. Some scientists say the hatchery fish are less physically fit than their wild brethren, with a swimming-pool mentality that does not serve them well in the ocean. And yet in years past, many survived to maturity simply because they were introduced in such overwhelming numbers. Some wildlife experts speculate that the hatchery-born fish may even be weakening wild populations they were meant to bolster by competing with the river-born fish for food and space, and heading home with them to breed, altering the gene pool.

Scientists are looking back to 2005, when the fish were sea-bound juveniles, small and vulnerable.

The trucked fish won't know where home is, exactly. Many will likely never find their way back to Battle Creek, not having swum down the river in the first place. These strays might spawn successfully elsewhere, but without that initial migration it might seem that some essential quality of salmon-ness is lost.

If this is the price of keeping the species going, so be it, said Hamelberg, who wears a wedding band etched with tiny salmon. "There's a greater public good here," he told me. "We're providing fish to the American public to eat, and also for aesthetic reasons—just for people to know they're in the system, that they returned. Our obligation is to keep these runs as sound as possible."

The hatchery workers looked weary as the trucks pulled away. As it turns out, chauffeuring tons of pinkie-length fish hundreds of miles is trickier than it sounds. During shipping the day before, the circulation system in one of the trucks stopped working, and 75,000 chinooks died.

Native peoples of the Pacific Northwest used to think salmon were immortal, and it's easy to see why. Even though the rivers hosted spectacular mass death scenes every year and were filled for weeks with rotting bodies, the next season's fish always mobbed the gravel beds. To safeguard this cycle, tribes were careful to place the bones of the season's first catch back in the river.

But the California and Pacific Northwest salmon populations have been declining for more than a century and a half.

"I'd much rather be out there fishing," says Cyrus Maahs (left: with his grandfather Sonny Maahs, on the family boat in Fort Bragg), "and have a job with freedom to it."

Gold miners washed the gravel out of streams and loggers dismembered river habitats. Fishermen caught so many salmon that the canneries couldn't keep up; barge loads were dumped back into the sea, and salmon carcasses were used to feed hogs and fertilize fields. Today, the Columbia River supports at most 3 percent of the salmon it boasted when Lewis and Clark passed through. The Klamath River, which starts in southern Oregon, has suffered major salmon kills. Some Pacific salmon varieties may share the fate of their East Coast cousins, the wild Atlantic salmon, which were killed off in huge numbers in the 19th century by overfishing, pollution and dams and are today nearly extinct in the wild.

By now, Sacramento chinooks have lost an estimated 70 percent of their original spawning habitat in central California. Dams did the most damage, drying up riverbeds and cutting off access to mountain spawning streams. Shasta Dam, completed in 1945, is the nation's second largest, far too big for the fish ladders that in some places help salmon reach their spawning grounds. Some populations barely survived. There are plenty of complaints against hatcheries—the main one is that artificially producing millions of fish masks deep ecological problems—but without the hatcheries, the Sacramento run could hardly have rebounded from industrialization the way it did. The fall run, probably numbering about a million at its peak, was until very recently holding steady at a quarter or more of that level, enough to keep the West Coast salmon industry afloat.

Then came this summer's calamity. The official list of possible causes is more than 40 items long, ranging from bridge construction in migration areas to a surging population of Humboldt squid, grabby predators that may or may not have a taste for chinook. Scientists are looking back to 2005, when the fish that should be returning to the river now would have been sea-bound juveniles, small and vulnerable. There were poor ocean conditions off the West Coast that spring. A shift in weather patterns—possibly related to global warming—delayed the seasonal upwelling of cold, nutrient-rich water that supports the base of the marine food chain. As a result, "everything that was expecting something to eat in May died," including juvenile salmon, said Bill Peterson, a fisheries oceanographer with the National Oceanic and Atmospheric Administration.

Other experts cite freshwater dangers, since fish weakened by a stressful trip downstream are less likely to survive in a hostile ocean. This is a politically loaded argument: many of those stresses, from pollution to introduced species, are man-made. "Protecting this icon means protecting the watershed, from where these things spawn in the mountains down to the ocean," said Jon Rosenfield, an aquatic conservation ecologist based in Berkeley, California. "If you operate the rivers in the way that's best for agriculture, that's not necessarily how the water would be operating on its own."

In addition to being the most populous state, California is the most productive agriculturally. But much of its farmland, and more than 75 percent of its population, lie south of Sacramento, while three-quarters of the precipitation falls north of it. Huge dams, the Shasta chief among them, hoard water that's released downstream on demand and pumped to the Central Valley and Los Angeles. The arrangement works out for millions of people but not always for the fish, which can get disoriented in artificial flows created by water diversions and never make it to the sea.

Such problems are expensive to fix and the solutions can mean water shortages, especially for farmers, which heighten the conflict between interest groups. "The environmental community exploits the problems in nature and ignores human problems," said Jason Peltier, deputy manager of the sprawling Westlands Water District, which supplies hundreds of farms in the Central Valley. "That's their agenda. I can't understand how they get away with it. I can't understand how [the groups] push a fish-and-nature-first agenda at the expense of human socioeconomic conditions."

Over the past decade or so changes have been made to California's intricate plumbing to give salmon safer passage. Shasta Dam was retrofitted, at a cost of roughly $80 mil-

lion, with a device that draws from the very bottom of its reservoir, supplying downstream areas with more of the cool water that spawning salmon require. In addition, hundreds of millions of dollars have been spent otherwise improving Sacramento River habitat.

But it's doubtful that any amount of effort or money can restore the salmon's world. I didn't fully understand this until I visited the most altered ecosystem of all, the one environmentalists are most likely to lament when discussing the king. It's where ocean and river meet: the vast and troubled estuary at the Sacramento's mouth, through which almost all the river's wild-born salmon pass en route to the Pacific. The former 400,000-acre tidal marsh is California's main water hub, a place both tamed beyond recognition and perilous for salmon in new ways, full of obstacles far more challenging than mere rapids.

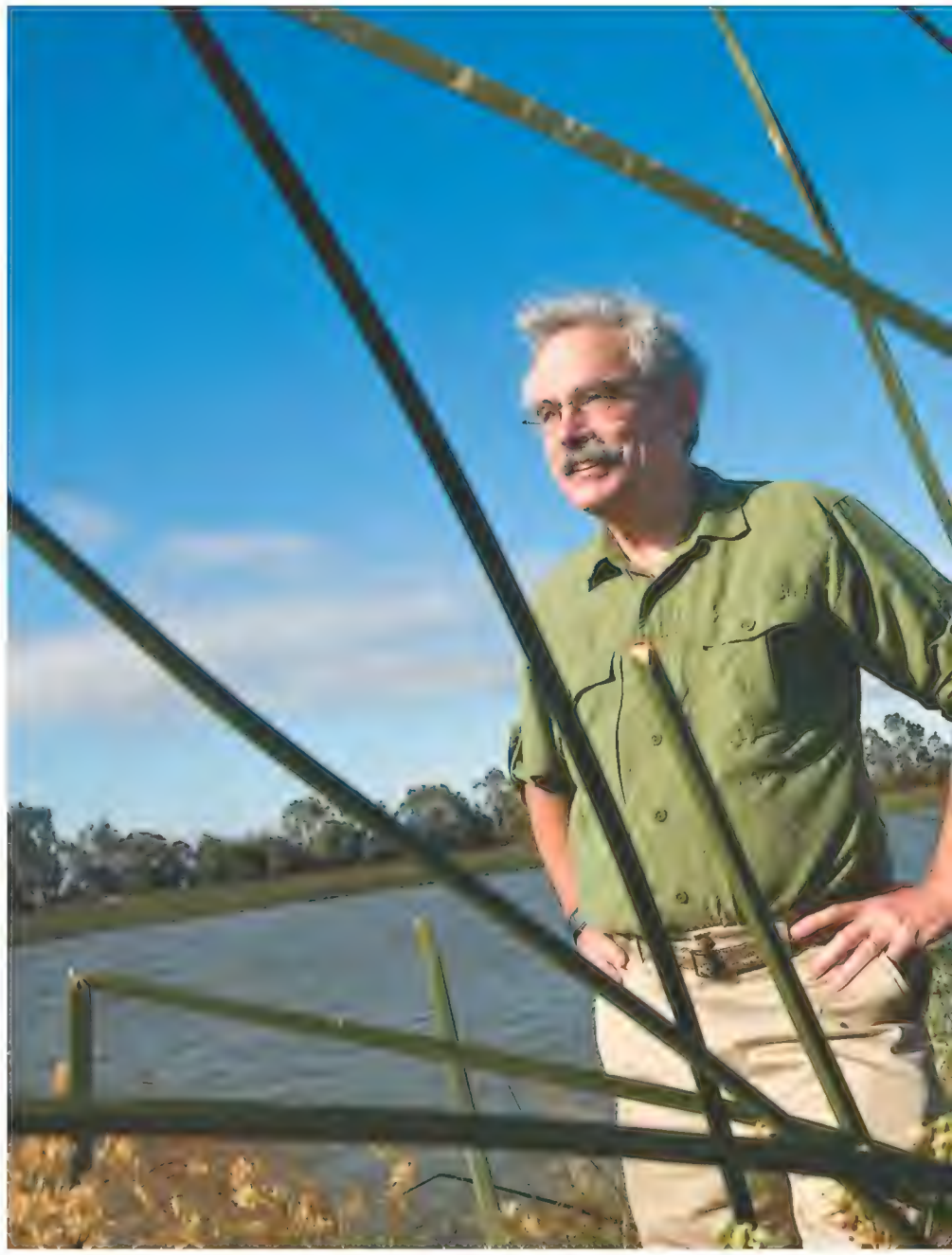
Just east of San Francisco Bay, the Sacramento-San Joaquin Delta stretches 50 miles south of Sacramento and some 25 miles west. Part of the largest estuary on North America's Pacific Coast, the delta was once a marshy haven of cattails and bulrushes. Juvenile salmon from both the Sacramento and San Joaquin rivers (which converge in the delta) used it as a kind of staging ground, tarrying in its shallows before going out to sea.

But 150 years and 1,100 miles of man-made levees later, the wetlands have been transformed. During the gold rush, they were drained and converted into a web of farming islands with winding channels in between. Ninety-five percent of the original marsh is gone, and what remains is the epitome of an artificial landscape, so squarely under civilization's thumb that it's almost impossible to imagine it otherwise. The islands—many of them ten feet or more below sea level due to soil decomposition—are a patchwork of crops and alien species: palm trees, European sycamores, Himalayan blackberry bushes, spindly grapevines propped up on sticks, extensive plantings of Bartlett pear trees and fields of lawn turf as green and smooth as a pool table. At times the air suddenly smells of licorice—wild fennel, another invasive species. Go around a levy bend and there might be a beached World War II landing craft used by a local duck-hunting club, a sign for brand-new mansion developments "Coming Soon" or the pink explosion of a garden-variety rosebush.

The waterways surrounding these islands are about as hospitable to salmon as drainage ditches. The remaining marshland teems with nonnative species, many of them ravenous stowaways from the cargo ships of nearby San Francisco Bay. Brazilian waterweed, an aquarium favorite, clogs the sloughs and retains sediments, making the water clearer and juvenile fish easier to spot: predators like largemouth bass—introduced as a sport fish more than a century ago—lie in wait. Upriver farms release potentially poisonous pesticides and herbicides. Wastewater from the Sacramento area, with its ballooning population, also seeps into the delta, and scientists are increasingly suspicious that ammonia from human sewage interrupts the seasonal cycle of phytoplankton blooms at the base of the food chain.

And then there are the pumps. Naturally brackish, the delta is now managed as a freshwater system, because fresh water is what's needed to fill bathtubs and irrigate fields and quench the thirst of Californians, about 25 million of whom rely on the delta for at least some of their water. Mammoth federal and state pumps in the delta's southern end, near the city of Tracy, slurp up roughly half of the Sacramento's flow and send it to Silicon Valley, Los Angeles and beyond. When the federal pumps are going full blast, six 22,500-horsepower motors pull water through pipes 15 feet in diameter, raising the flow into a canal that helps irrigate the middle of Cali-

What remains is the epitome of an artificial landscape, squarely under civilization's thumb.



View a video about California fishermen at Smithsonian.com/salmon

fornia's Central Valley. (The state pumps are even bigger.)

The pumps are powerful enough to alter the currents miles away, confusing migrating salmon. Often, salmon are siphoned along with the water. More than half of these are salvaged near the pumps at fish-collection facilities, where the buckets are checked every two hours, the operators pawing through seaweed to find the tiny fish, which are then loaded into trucks and driven back to the delta. But the smallest chinooks can slip through; in past years tens of thousands have died. In 2005, that fateful year for this season's salmon, the pumps exported record amounts of water from the delta.

"The higher the export rate, the more fish are lost," said Tina Swanson, a biologist and head of the Bay Institute, an advocacy group that monitors San Francisco Bay and the delta. "Even small increases can lead to disproportionately high losses."

Constructed mostly in the middle of the last century, the pumps are relics of a time when fish populations were not much valued or understood. Lately California's attitude has changed. When I visited the federal pumps, they were churning much more slowly than usual because of a court order to protect a threatened fish called the delta smelt. Already, farmers to the south were not getting water they'd asked for. They were also nervous about another lawsuit, filed by a coalition of environmentalists, fishing associations and Native Americans on behalf of the Sacramento's winter-run chinook and other salmon species. Among other things, the plaintiffs want more reliable cold releases from the Shasta reservoir, which could limit flows to the pumps.

"I can't be without [that] water," said Daniel Errotabere, co-owner of Errotabere Ranch, which grows some 5,600 acres of almonds, lettuce and other crops with the help of delta flows. This summer the farm got just 40 percent of the water it had ordered from the pumps. "We're not wasting anything. All our crops are pretty much spoonfed. I can't do any more than I'm doing, unless there's a way to find a crop that doesn't need water."

My guide to the fantastical Sacramento-San Joaquin Delta was Peter Moyle, of the University of California at Davis, an estuary and fish expert who made room on his research boat to show me a bit of what the delta is and used to be. I wanted to see some wild baby salmon, which he said was not likely, since it was late in a dry spring. I felt sure he would be relieved to see some too. When I picked him up in Davis, there were salmon prayer flags fluttering in front of his house.

Moyle has spent much of the past 30 years in the grayish-brown marsh mud on the outskirts of the delta, and he's the authority on local fish—the California roach, the Sacramento sucker, the tule perch—much less glamorous than salmon. He's the go-to person on the delta smelt, a homely little fish that smells like cucumber and faces many of the same challenges as the chinook.

Moyle's rickety aluminum

LOWER RIGHT: JEFF BARNARD / AP IMAGES

A proposed multibillion-dollar canal around the delta (left: Moyle in Suisun Marsh with bulrushes and alien white-flowered pepperweed) would benefit salmon (below: hatchery chinook about a month old).

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Today's West Coast salmon fishermen must long for the old days of plenty (a 1903 catch in Bellingham, Washington).

research vessel, *The Marsh Boat*, was crewed by two graduate students. We pulled on waders and life vests and then bounced off into a stiff north wind, which made the tall grasses on the shore roll like waves. We were surveying fish populations on the outskirts of the delta in the Suisun Marsh, which has not been tampered with as much as adjoining areas and is reminiscent of what the whole place might have looked like before the gold rush: an expanse of bulrushes and brownish water, with snowy egrets stalking the perimeter and white pelicans flapping overhead. It was almost possible to ignore the bellow of an Amtrak train bound for San Francisco and the jets landing at nearby Travis Air Force Base.

The boat stopped by a muddy beach, depositing Moyle, me and a graduate student studying invasive jellyfish from the Caspian Sea. The other student roared off in hot pursuit of zooplankton. We walked the shore, with the professor periodically plunging into the water to drag a net. "If you were a baby salmon, this is exactly where you'd want to be," said Moyle, his bifocal sunglasses glinting as he eyed a particularly inviting stand of bulrushes. "This would have been full of food, full of cover. You could have escaped your predators and there were strong enough currents that you could find your way out to sea."

Nearly everyone's unhappy with the delta as it is today. Some say that rising sea levels and earthquakes threaten its structure, and since Hurricane Katrina there have been calls to armor the levees to maintain the delta as a freshwater system. Others advocate reducing water exports from the delta, doing away with the levees and unleashing the river to become brackish again in places and flow where it will.

The plan that has lately gained the backing of Gov. Arnold Schwarzenegger involves digging a canal upstream of the delta that would send fresh Sacramento water straight to the pumps. With the help of fish screens, the salmon would stay in the main river and continue their migration without the threat of artificial currents. "Separate the water for people from the water for fish," said Timothy Quinn, executive director of the Association of California Water Agencies. "Manage each for their own purposes."

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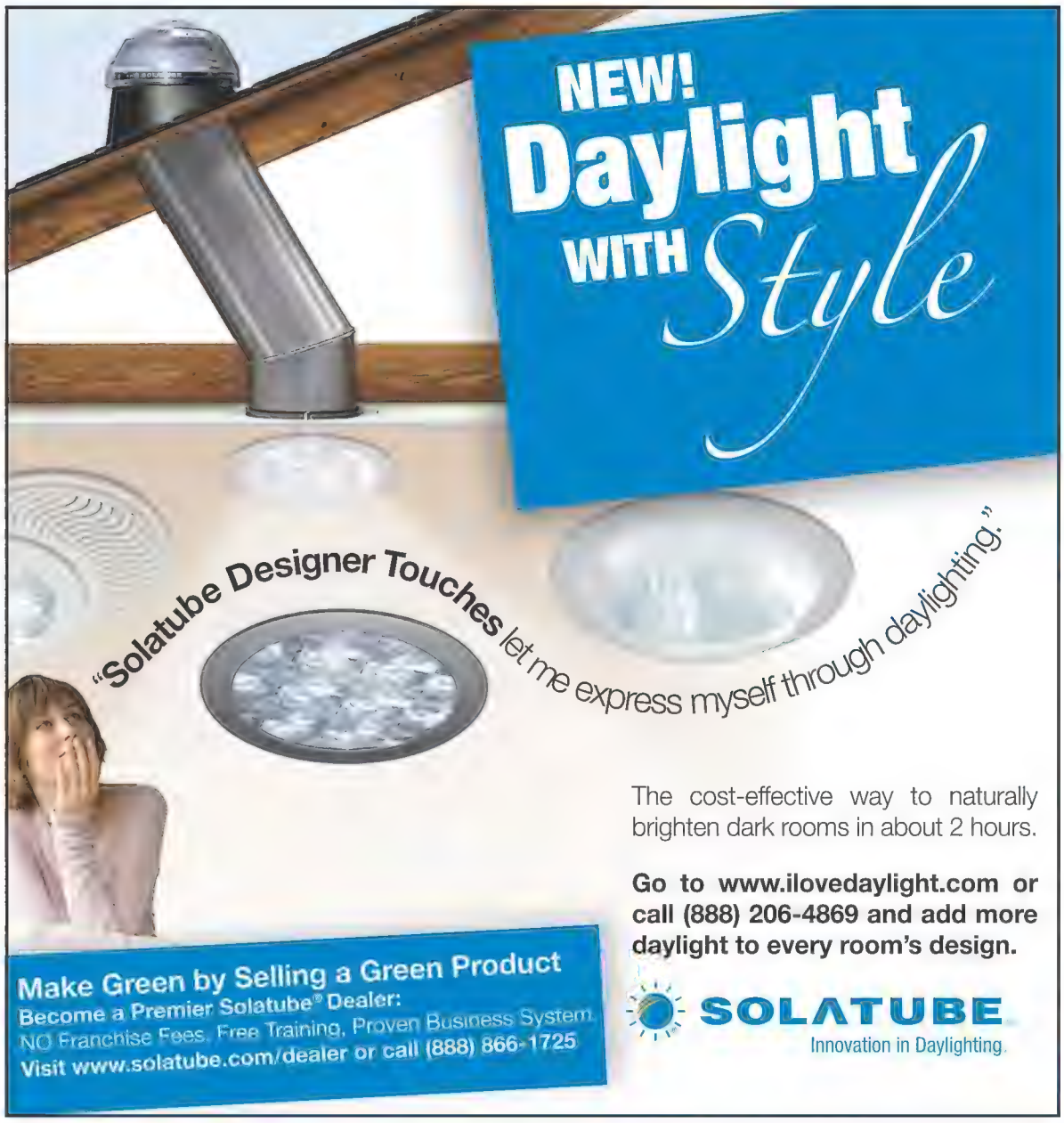
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Quinn says healthy fish populations and a reliable water supply aren't mutually exclusive. In fact, he takes his grandkids every year to see the spawning in Butte Creek, a Sacramento River tributary. "I don't want them growing up in a state where they'll sacrifice fish to get cheap water," he said.

But the peripheral canal, as it's called, is so controversial it's known as the "third rail" of California politics, and voters have nixed it before. Building it would take more than a decade and cost billions, and California will need to figure out how to accommodate another eight million thirsty residents by 2025. Still, academics from different disciplines have begun to agree that the canal may be the only way. "The devil's in the details, though," Moyle said. "No matter what you do, it's going to be complicated—and expensive."

Our nets yielded plenty of fish that morning on the marsh, many of them nonnative: baby carp, yellowfin goby and inland silversides, transparent little fish with a stripe like thermometer mercury. Moyle held flapping palmfuls as he measured them one by one, then tossed them back into the water. He had been right: we saw no young salmon.

To fishermen, the chinook is known as a fighter, and likewise its advocates won't let the fish die out without a struggle. People desperately want to save wild salmon. "DEMAND Wild Californian King Salmon" stickers adorn car bumpers, and products like Butte Creek Brewing's Spring Run Organic Pale Ale benefit the kings. A SalmonAid concert stirred up support in Oakland this past spring, and an advocacy group for Columbia and Snake River salmon hauled a 25-foot fiberglass chinook from Seattle to Washington, D.C., stopping at schools and farmer's markets along the way. Another lawsuit to ensure the wild salmon's safe passage continues to wind its way through the courts.

Even as the crisis deepens, the nation's appetite for salmon grows, thanks largely to the farmed variety. In 1980, almost none of our fresh salmon meat came from fish farms; now three-

quarters of it does. Corporations in Norway, Canada and Chile run many of the farms, and most of the fish are Atlantic salmon. Raised in offshore pens, removed entirely from rivers, they eat formulated pellets instead of krill, so their flesh is naturally gray. Aquaculturists feed the fish color additives to make the flesh pink, fine-tuning the hue with the help of a color wheel called the SalmoFan. As a result inexpensive salmon meat is now sold practically everywhere, including Wal-Mart—an abundance that obscures the wild salmon's plight.

Salmon fishing in California and Oregon will probably have to be limited for a few years, to allow stocks to recover. Among those who continue to have faith in the king's return is 26-year-old Cyrus Maahs, a fourth-generation Fort Bragg salmon fisherman. He grew up trolling with his grandfather, Sonny Maahs, who helped found the town's annual salmon cook-off 37 years ago, when the rivers still thrashed with fish and the sea was full of them. Cyrus' father, Mike, put himself through college on salmon money and died at sea in a storm; his name is on the fishermen's memorial in the harbor, beside the charred concrete barbecue pits.

Cyrus believes he has inherited the family instinct to clear the jetty in a thick fog, to pick the perfect psychedelic-colored salmon lure. I asked him if he ever considered a more stable line of work—serving Fort Bragg's burgeoning tourist trade, perhaps, or leading whale-watching trips. "I'd much rather be out there fishing, and have a job with freedom to it," he said. "Once you get a taste of that, it's hard to give up."

The family boat, *Kromoli*, spent most of the summer at anchor with much of the rest of the town's fleet. Some fishermen contemplated putting their boats up for sale, on the off chance someone would buy them. And yet, even in Fort Bragg, the myth of a bountiful fishery persists. Visitors to this July's World's Largest Salmon Barbeque did not go hungry, for instance. They were served coho salmon flown in from Alaska.

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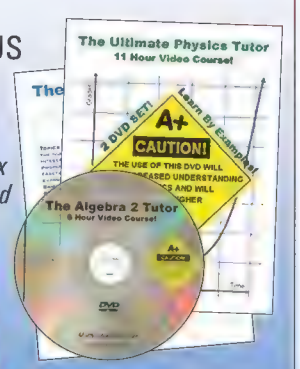

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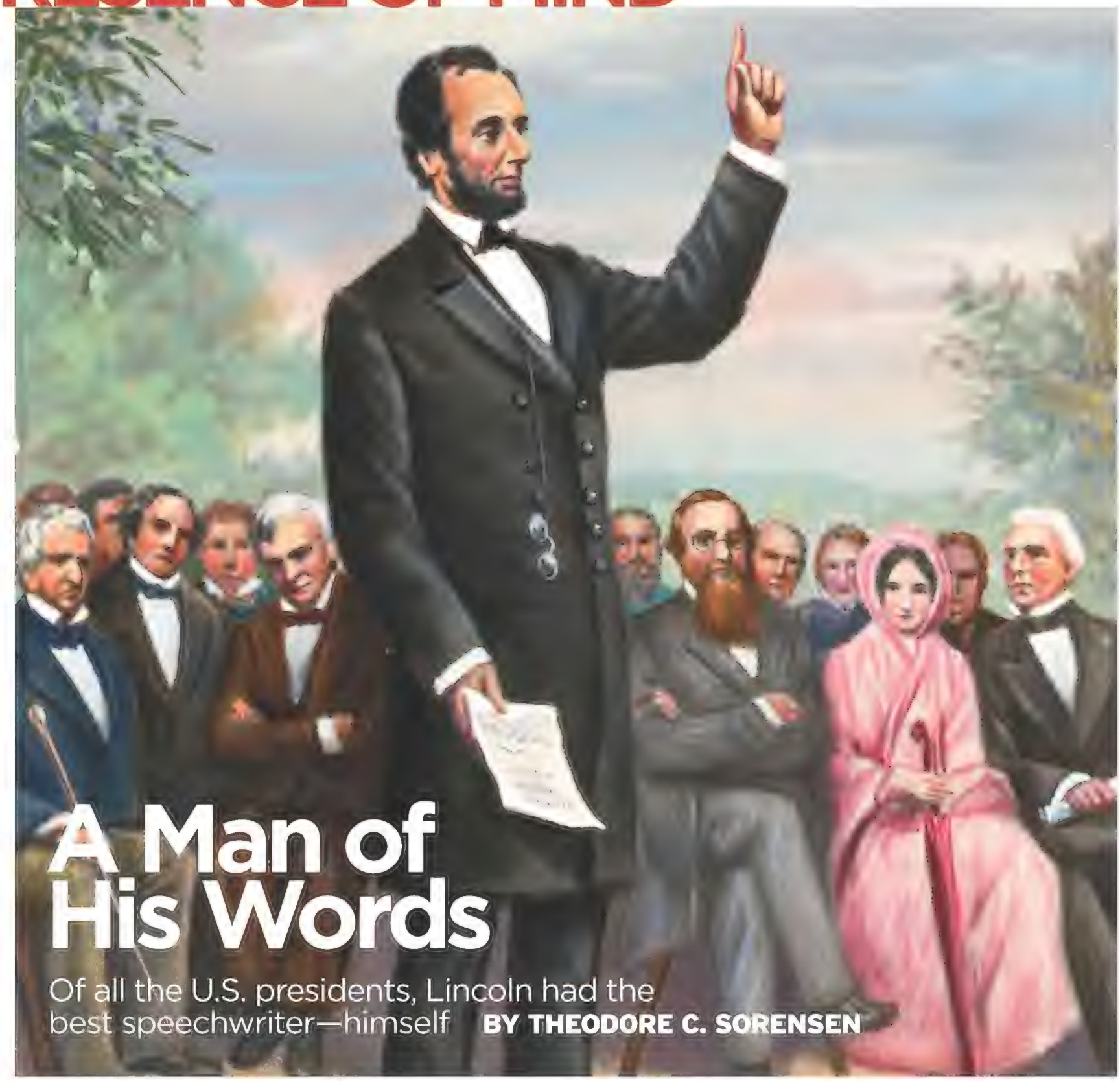

A Man of His Words

Of all the U.S. presidents, Lincoln had the best speechwriter—himself **BY THEODORE C. SORENSEN**

ABRAHAM LINCOLN, the greatest American president, was also in my view the best of all presidential speechwriters. As a youngster in Lincoln, Nebraska, I stood before the statue of the president gracing the west side of the towering state capitol and soaked up the words of his Gettysburg Address, inscribed on a granite slab behind the statue.

Two decades later, in January 1961, President-elect John F. Kennedy asked me to study those words again, in preparing to help him write his inaugural address. He also asked me to read all previous 20th-century inaugural addresses. I did not learn much from those speeches (except for FDR's first inaugural), but I learned a great deal from Lincoln's ten sentences.

Now, 47 years later, as another tall, skinny, oratorically impressive Illinois lawyer is invoking Lincoln as he pursues his own candidacy for president, and with Lincoln's bicentennial underway (he turns 200 February 12, 2009), I want to acknowledge my debt.

Lincoln's Gettysburg Address (above: an undated rendering) inspired the author as he helped John F. Kennedy (left: as a candidate in 1960) craft his inaugural address.

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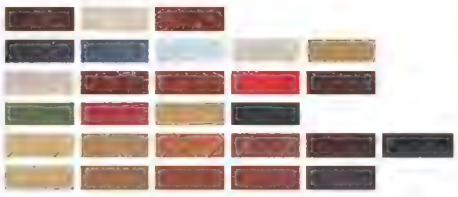

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William Seward made suggestions for Lincoln's first inaugural; the final text shows which man was the better writer.

Lincoln was a superb writer. Like Jefferson and Teddy Roosevelt, but few if any other presidents, he could have been a successful writer wholly apart from his political career. He needed no White House speechwriter, as that post is understood today. He wrote his major speeches out by hand, as he did his eloquent letters and other documents. Sometimes he read his draft speeches aloud to others, including members of his cabinet and his two principal secretaries, John Hay and John Nicolay, and he occasionally received suggestions, particularly at the start of his administration, from his onetime rival for the presidency, Secretary of State William Seward. On the first occasion on which Seward offered a major contribution—Lincoln's first inaugural—the president demonstrated clearly that he was the better speechwriter. Seward's idea was worthy, principally a change in the ending, making it softer, more conciliatory, invoking shared memories. But his half-completed proposed wording, often cited by historians, was pedestrian: "The mystic chords which proceeding from so many battle fields and so many patriot graves pass through all the hearts . . . in this broad continent of ours will yet again harmonize in their ancient music when breathed upon by the guardian angel of the nation."

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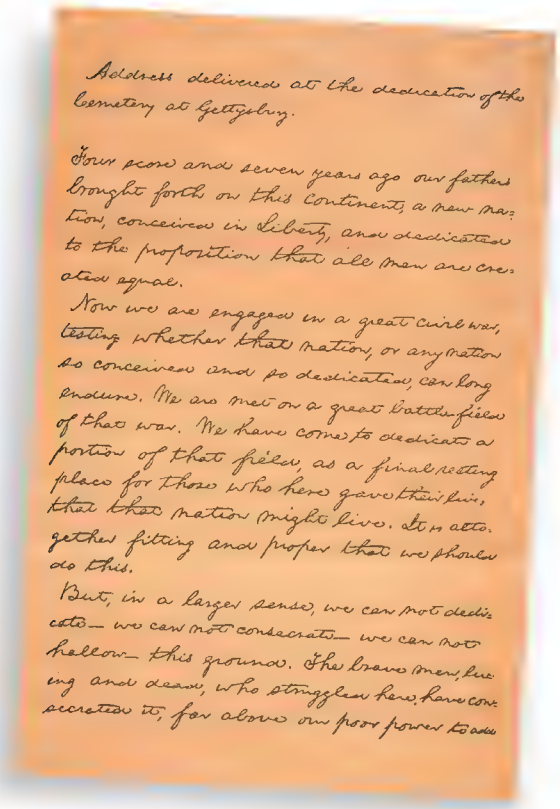
Lincoln graciously took and read Seward's suggested ending, but, with the magic of his own pen, turned it into his moving appeal to "the mystic chords of memory," which, "stretching from every battlefield and patriot grave to every living heart and hearthstone all over this broad land, will yet swell the chorus of the Union, when again touched, as surely they will be, by the better angels of our nature."

Lincoln was a better speechwriter than speaker. Normally, the success of a speech depends in considerable part on the speaker's voice and presence. The best speeches of John F. Kennedy benefited from his platform presence, his poise, personality, good looks and strong voice. William Jennings Bryan moved audiences not only with the extravagance of his language, but also with the skill of his movements and gestures, the strength of his voice and appearance. Democratic Party leaders not attending the 1896 National Convention at which Bryan delivered his "Cross of Gold" speech, and thus not carried away by the power of his presence, later could not understand his nomination on the basis of what they merely read. Franklin Roosevelt's speeches, for those who were not present for his performance, were merely cold words on a page with substantially less effect than they had for those who were present to hear them.

But Lincoln's words, heard by comparatively few, by themselves carried power across time and around the world. I may have been more moved by his remarks at the Gettysburg cemetery when I read them behind his statue at the state capitol in Lincoln in 1939 than were some of those straining to hear them on the outskirts of the audience at Gettysburg in 1863. The Massachusetts statesman Edward Everett, with his two-hour speech filled with classical allusions, had been the designated orator of the day. The president was up and quickly down with his dedicatory remarks in a few short minutes. Some newspapers reported: "The President also spoke."

Lincoln's voice, reportedly high, was



Address delivered at the dedication of the Cemetery at Gettysburg.

Four score and seven years ago our fathers brought forth on this Continent, a new nation, conceived in Liberty, and dedicated to the proposition that all men are created equal.

Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battle-field of that war. We have come to dedicate a portion of that field, as a final resting place for those who here gave their lives, that that nation might live. It is altogether fitting and proper that we should do this.

But, in a larger sense, we can not dedicate — we can not consecrate — we can not hallow — this ground. The brave men, living and dead, who struggled here, have consecrated it, far above our poor power to add

The Gettysburg Address might have begun, "Eighty-seven years ago," but Lincoln's poetic ear heard the music.

not as strong as Bryan's, nor were his looks as appealing as Kennedy's. (Lincoln himself referred to his "poor, lean, lank face.") His reading was not electronically amplified nor facilitated by a teleprompter, which today almost every president uses to conceal his dependence on a prepared text. (Why? Would we have more confidence in a surgeon or a plumber who operated without referring to his manual? Do we expect our presidents to memorize or improvise their most important speeches?) Lincoln also spoke with a Midwestern inflection that—in those days, before mass media created a homogenized national audience and accent—was not the way folks talked in Boston or New York, making him difficult for some audiences to understand.

But Lincoln's success as an orator stemmed not from his voice, demeanor or delivery, or even his presence, but from his words and his ideas. He put into powerful language the nub of the matter in the controversy over slavery and secession in his own time, and the core meaning for all time of this nation itself as "this last best hope of earth." Such great and moving subjects produce many more great and moving speeches than discussions of tax cuts and tariffs.

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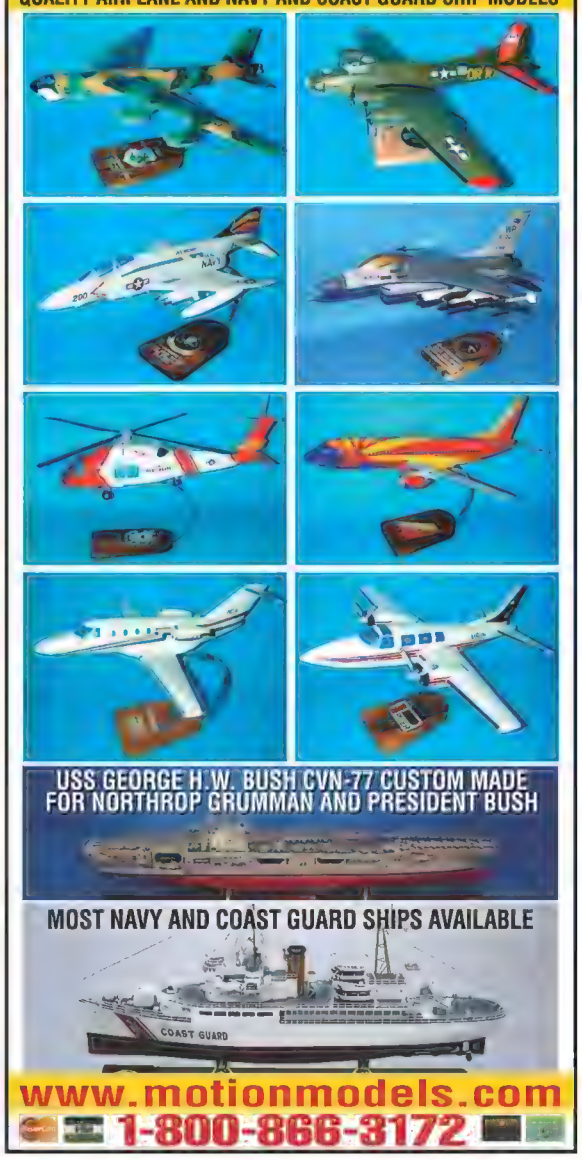

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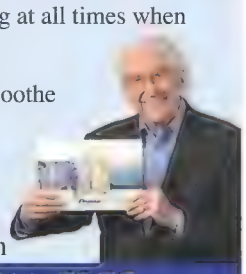

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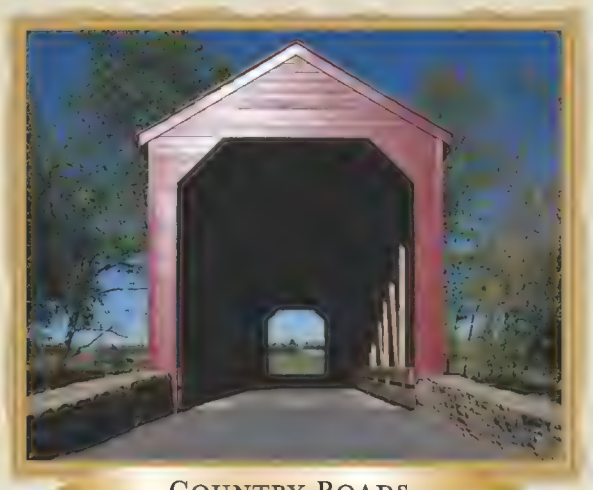

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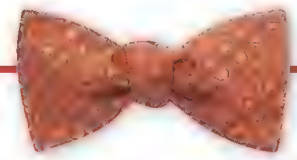

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his antislavery Peoria speech of 1854 and in the 1860 Cooper Union address, which effectively secured for him the Republican nomination for president. But most Lincoln speeches eschewed detail for timeless themes and flawless construction; they were profound, philosophical, never partisan, pompous or pedantic. His two greatest speeches—the greatest speeches by any president—are not only quite short (the second inaugural is just a shade over 700 words, the Gettysburg Address shorter still), but did not deal in the facts of current policy at all, but only with the largest ideas.

A president, like everyone else, is shaped by his media environment, and if he is good, he shapes his communication to fit that environment. Lincoln lived in an age of print. Oratory was important political entertainment; but with no broadcasting, his words reached large audiences outside the immediate vicinity only by print. His speeches were published in the newspapers of the day and composed by him with that in mind. He spoke for readers of the printed page, not merely for those listening. His words moved voters far from the sound of his voice because of his writing skills, his intellectual power, his grip on the core issue of his time and his sublime concept of his nation's meaning.

Franklin Roosevelt mastered the fireside chat on radio, Kennedy the formal address on television, Bill Clinton the more casual messages. Of course, modern American television audiences would not tolerate the three-hour debates Lincoln had with Stephen Douglas, or his longer speeches—but that was a different age. Lincoln was adaptable enough that he could have mastered modern modes of political speech—today's sound-bite culture—had he lived in this era. He had a talent for getting to the point.

Lincoln avoided the fancy and artificial. He used the rhetorical devices that the rest of us speechwriters do: alliteration ("Fondly do we hope—fervently do we pray"; "no successful appeal from the ballot to the bullet");

rhyme ("I shall adopt new views so fast as they shall appear to be true views"); repetition ("As our case is new, so we must think anew, and act anew"; "We cannot dedicate, we cannot consecrate, we cannot hallow this ground"); and—especially—contrast and balance ("The dogmas of the quiet past are inadequate to the stormy present"; "As I would not be a slave, so I would not be a master"; "In giving freedom to the slave, we assure freedom to the free").

He used metaphors, as we all do, both explicit and implicit: think of the implied figure of birth—the nation "brought forth," "conceived"—in the Gettysburg Address. He would quote the Bible quite sparingly, but to tremendous effect. See how he ends the monumental next-to-last paragraph of the second inaugural: "Yet, if God wills that [the Civil War] continue until all the wealth piled by the bondsman's two hundred and fifty years of unrequited toil shall be sunk, and until every drop of blood drawn with the lash shall be paid by another drawn with the sword, as was said three thousand years ago, so still it must be said, 'the judgments of the Lord are True and Righteous Altogether.' "

But the triumph of this greatest example of American public speech did not come from devices alone. Lincoln had in addition two great qualities infusing his use of those devices. First, he had a poetic literary sensibility. He was aware of the right rhythm and sound. An editor of the Gettysburg Address might say that "Eighty-seven years ago" is shorter. Lincoln wrote instead, "Four score and seven years ago."

And, finally, he had the root of the matter in him. The presidents greatest in speechcraft are almost all the greatest in statecraft also—because speeches are not just words. They present ideas, directions and values, and the best speeches are those that get those right. As Lincoln did.

THEODORE C. SORENSEN, *former special counsel to President John F. Kennedy, is the author, most recently, of* Counselor: A Life at the Edge of History.

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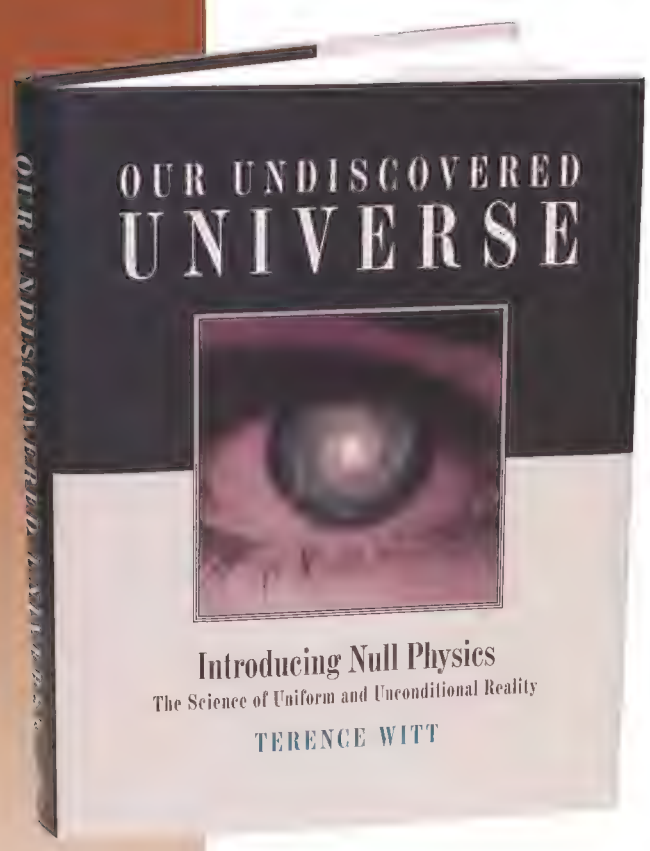

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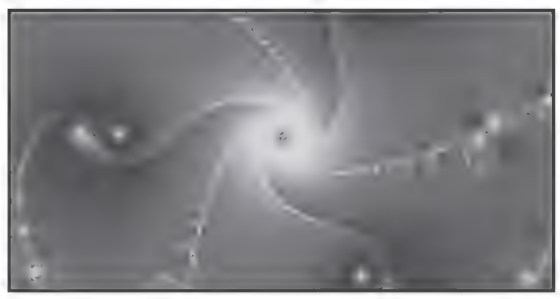

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Because of conventional training, people often think they already know what is right action, or question Wetherill's ability to know. The fact is that the law defines right action—no person. We use words to define it such as ***action that is both rational and honest***. People's definitions of right action tend to be *their* definitions, which is why society is not trouble-free.

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TIME IS IT. Over 92% of people who own exercise equipment and 88% of people who own health club memberships do not exercise. A 4 minute complete workout is no longer hard to believe for all the people who since 1990 have bought our excellent Range of Motion machine (ROM).

Over 97% of people who rent our ROM for 30 days wind up purchasing it based upon the health benefits experienced during that tryout, and the ROM performance score at the end of each 4 minute workout that tells the story of health and fitness improvement.

If you value your time at more than $5 an hour, the ROM machine is the least expensive method of exercise for you.

The ROM 4 minute workout is for people from 10 to over 100 years old and highly trained athletes as well. The ROM adapts its resistance every second during the workout to exactly match the user's ability to perform work. It helps to balance blood sugar, and improves bad backs and shoulders.

Too good to be true? Get our free video and see for yourself. The best proof for us is that 97% of rentals become sales. Please visit our website at: **www.FastExercise.com**.

The typical ROM purchaser goes through several stages:

1. Total disbelief that the ROM can do all this in only 4 minutes.
2. Rhetorical (and sometimes hostile) questioning and ridicule.
3. Reading the ROM literature and reluctantly understanding it.
4. Taking a leap of faith and renting a ROM for 30 days.
5. Being highly impressed by the results and purchasing a ROM.
6. Becoming a ROM enthusiast and trying to persuade friends.
7. Being ignored and ridiculed by the friends who think you've lost your mind.
8. After a year of using the ROM your friends admiring your good shape.
9. You telling them (again) that you only exercise those 4 minutes per day.
10. Those friends reluctantly renting the ROM for a 30 day trial.
    Then the above cycle repeats from point 5 on down.

The more we tell people about the ROM the less they believe it.

From 4 minutes on the ROM you get the same results as from 20 to 45 minutes aerobic exercise (jogging, running, etc.) for cardio and respiratory benefits, plus 45 minutes weight training for muscle tone and strength, plus 20 minutes stretching exercise for limberness/flexibility.

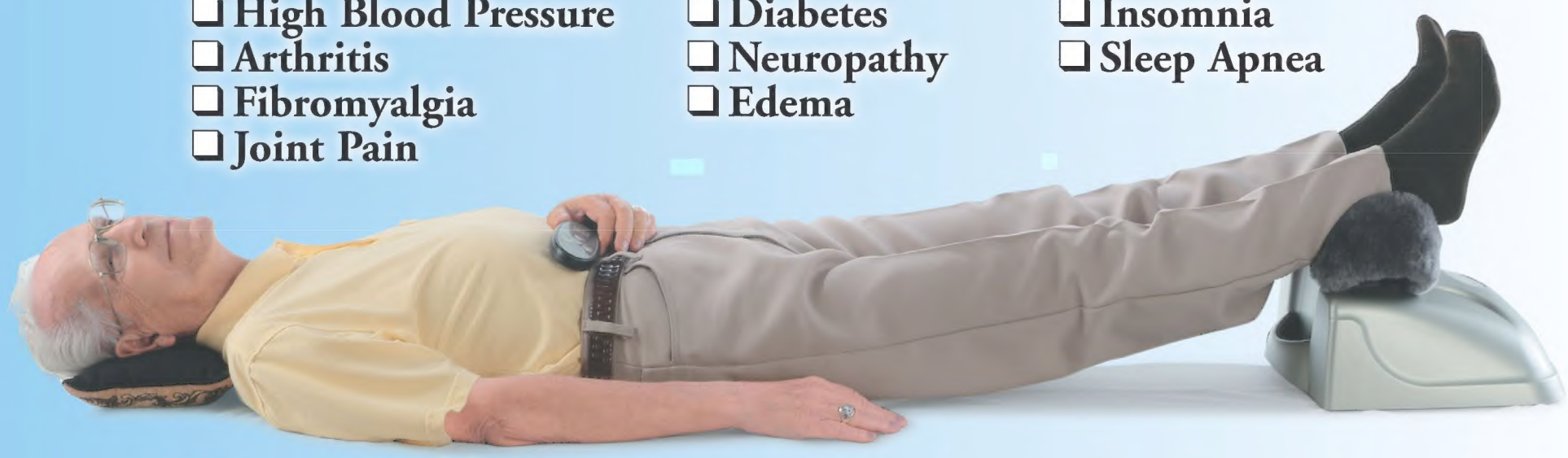
Order a **FREE** DVD from **www.FastExercise.com** or call (818) 504-6450

Factory Showroom: **ROM**FAB, 8137 Lankershim Blvd., North Hollywood, CA 91605
Fax: (818) 301-0319 • Email: sales@FastExercise.com

RENT A ROM FOR 30 DAYS. RENTAL APPLIES TO PURCHASE.

If you suffer from

- ❑ Stress
- ❑ Headaches
- ❑ High Blood Pressure
- ❑ Arthritis
- ❑ Fibromyalgia
- ❑ Joint Pain
- ❑ Constipation
- ❑ Back Pain
- ❑ Diabetes
- ❑ Neuropathy
- ❑ Edema
- ❑ Stiff Muscles
- ❑ Poor Circulation
- ❑ Insomnia
- ❑ Sleep Apnea



You will enjoy using the Exerciser 2000 *Elite*™

Receive some of the benefits of aerobic exercise without stress or impact on the joints!

Relaxation of the back muscles

Oxygenation of the blood

Increased mobility

Increase circulation throughout the body

Helps relieve stiffness from head to toe

These statements have not been evaluated by the FDA.
Not intended to treat, cure or prevent any diseases.

How Does the Exerciser 2000 Elite™ Work?

Enjoy the benefits of passive exercise—just lie down, place your ankles on the ankle rest and let the machine do the work.

When you turn the machine on, it creates a 2 inch, right to left movement that gently moves the body back and forth.

This gentle swinging motion cycles up through the whole body, creating an exercise movement without stress or impact on the joints.

Don't be fooled by cheap imitations

Features

- Weighs only 15 pounds
- 15" wide x 13.5" deep x 9.5" high
- ISO-9001 CERTIFIED
- FDA Class 1 Registered
- ETL Approval
- 5-speed operation
- 2 pre-programmed selections —one for relaxation and one for energizing
- Heavy duty, high torque DC motor
- Wide cushioned ankle rest
- 16 minute digital timer with safety shut-off
- **2 year parts and labor warranty**

What people are saying about the Exerciser 2000 Elite™

After using the Exerciser 2000 Elite™ twice a day for one week the swelling in my ankles went away. It has also helped my breathing, as I can get out and walk without having to stop and catch my breath! Thank you. *—Shirley H., Florida*

After having a stroke, I could no longer exercise the way I used to. As a result, I developed edema. A friend of mine introduced me to the Exerciser 2000 Elite™. I loved it and I purchased one for myself. After using the machine daily for a few weeks, my symptoms of edema were completely gone. I now use the machine twice a day for 16 minutes each time on speed 3. What a wonderful way to exercise.*—Robert M.*

I am in my late 80's and have diabetes. The first thing I noticed when I started using my machine was that my feet were warm when I went to bed. They were always ice cold before. Because one of my problems is poor circulation, I use the machine three times a day for 10 minutes each; in the morning, late afternoon and just before bed. I almost forgot to mention that I have not been able to lift my arms above my head. Now I can do it. You think that's no big deal until you can't do it anymore. *—Ralph K.*

As a Chiropractor, I would like to say that the Exerciser 2000 Elite™ enables people to benefit themselves at home. It is a valuable asset in moving lymph fluid, oxygenating the blood, increasing immune system function, maintaining mobility in the spine, and additionally freeing up a spine that has become stiff and arthritic. *—Garry Gorsuch, D.C.*

I love using the Exerciser 2000 Elite™ after my morning workout. It is an excellent way to cool down and it helps to start my day off right.*—Deanna C., Kansas*

My husband and I have been into natural products all of our lives but nothing has ever affected us like the Exerciser 2000 Elite™. My husband is 72 and delivers flowers. He carries 5 gallon buckets of water. Since using the machine, his back hasn't hurt him at all. My hips would hurt if I stood too long and I would get weak and have to sit down. Now I can walk and sit as long as I want. I don't take pain medication anymore. In the morning, when I get out of bed I'm not stiff anymore. At 65, wow, this is great! Thank you for offering such a great machine. We are going to tell everyone we know about it. *—Cheryl J.*

The ad I saw almost sounded "too good to be true". With your no risk money back guarantee I figured I had nothing to lose so I purchased the machine… and boy, am I glad I did! I am 75 years old and suffer from sciatica, which makes my back and legs tighten up and causes numbness. I was taking 8-10 Aleve™ every day. After using the machine for only 4 minutes, I noticed my lower back loosening up. Since I have been using the machine I haven't taken any pain pills and have been pain free. My sciatica is not giving me problems anymore and my body stays loosened up. I have also had a snoring problem for quite some time, however, since using the machine my snoring has subsided. My wife is so excited! I cannot tell you how much this machine has turned my life around. *—C. Cummings*

I have had constipation problems for over 25 years. Since I have been using the Exerciser 2000 Elite™ I have been regular every day and have begun to lose weight. This is truly a blessing and is so easy to use. *—Jeannie*

I had suffered with sleep apnea for many years and had been taking drugs for it. I was told I would have to use a breathing apparatus. In the meantime, I was introduced to the Exerciser 2000 Elite™ and decided to purchase one. Within two weeks, I was sleeping more deeply and restfully than ever before. *—David B.*

~~Retail Price: $464.95~~

✔ *Use code C700 when ordering by phone or website and receive a promotional price of* **$359.95** *and FREE shipping in the Continental United States.*

✔ *90 Day No Risk Money Back Guarantee—You have nothing to lose. If you are not completely satisfied, you can return it for a full refund. We provide a FREE return shipping label for your convenience.*

Save $90.00 on demo units when available.

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The "Helping People Feel Better" Company

240 Berg Road, Salina, KS 67401

Same Olde, Same Olde

Swiftboating George Washington

BY DAVID MARTIN

Back page of the January 3, 1789, edition of the Philadelphia Weekly Gazette:

WE, THE DELAWARE BOAT VETERANS, take as our solemn duty before our Creator to make known the truth concerning the Presidential candidate who calls himself George Washington. We beseech the public to read our account.

General Washington hath permitted certain myths and misconceptions to arise surrounding his alleged role in the crossing of the Delaware River on December 25, 1776. As pious and patriotic citizens, We have the Means of calling the right of it in question and thereby setting history's record straight.

On the night recalled, Each one of us did cross the Delaware. But none did see General Washington in any of the lead boats. We were in the first two boats to come ashore and We attest that no officer of a rank higher than captain was with us.

Whilst it may be that the General did in due course make his way to the opposite bank, it was well after the dawn and passage was in a heated ferryboat. Any account of him astride the bow of the first boat is most assuredly a fable—perhaps a rumor conceived by the General himself, to provide inspiration for a future painting in the service of his vanity.

We further have it on reliable evidence that General Washington spent Christmas night at a local Inn in the company of his goodly wife, Martha. Whilst we suffered the bitter cold of that fearsome night, he supped and drank and then slept under down in warm comfort. By these perfidies, he has verily shewn himself to be unfit to rule a free people.

We desire not to tarnish the General's reputation. Indeed, we seek only the God's truth, for Washington did command the Continental Army and, by His grace, was ultimately victorious.

However, might not the triumph have come much sooner and at far less cost? Washington's injudicious splitting of forces and continual retreats surely prolonged the War far beyond its expected end. It was only the ill-advised decisions of British General Howe that saved us from catastrophic defeat in New York.

There are those who claim that Washington's intemperate use of food and drink impaired his judgment, but we offer no comment on that matter, for he always supped alone and discarded his empty bottles away from our sight.

It has been said by some that we are partisans of John Adams or Thomas Jefferson. We know not from where such false rumours hath arisen. We are independent citizens under no sort of Influence public or private. We seek payment from no man but have concern only for the well-being of these United States.

As veterans of the war of Independence, We would find it most agreeable to support one of our own as Leader of this new country. But when a man such as Washington seeks to corrupt the truth to his own benefit, we cannot in all good conscience stand idly by. In truth, we doubt even the veracity of the tiresome childhood fable about his refusal to dissemble about the cherry tree he felled when the tempers were upon him.

DAVID MARTIN's *essay "Dream On" appeared in the July 2008* SMITHSONIAN.

ERIC PALMA